Appendix P

Alternative A1 Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

A1 PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8807	11:40	2:29	5:14	21:22	9	11	8:16
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9673	20:41	3:50	11:46	35:39	5	6	17:17
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8014	7:57	0:52	5:57	11:04	11	13	5:11
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	10023	13:16	4:09	6:57	34:13	9	11	10:06
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	7211	22:30	5:51	9:25	38:41	4	5	19:55
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	8024	5:40	1:15	4:04	10:47	16	19	2:58
Barbur Blvd/Capitol Hwy	6th Ave/College St	11405	9:42	2:03	7:31	14:21	13	16	5:31
5th Ave/College St	Barbur Blvd/Capitol Hwy	11237	9:03	2:43	5:05	22:34	14	18	4:22
5th Ave/College St	Lincoln St east of Naito Pkwy	2024	3:31	0:11	3:16	4:09	7	7	0:41
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	2:29	0:12	2:10	3:08	12	13	0:28
Barbur Blvd/Capitol Hwy	6th Ave/College St	11466	6:44	0:17	6:14	7:30	19	20	1:32
5th Ave/College St	Barbur Blvd/Capitol Hwy	11239	6:29	0:18	5:50	7:38	20	21	1:15
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5682	11:55	5:08	2:36	32:36	5	9	10:12
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3991	10:53	5:16	1:52	28:13	4	9	9:11
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7155	33:28	15:31	7:40	18:55	2	4	31:15

Appendix Q

Alternative A2-BH Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

A2-BH PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8517	11:20	3:41	3:55	24:07	9	12	8:03
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9706	27:23	7:48	13:01	50:43	4	6	23:56
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8258	5:26	0:51	2:41	9:14	17	22	2:42
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	9969	16:38	6:44	5:53	42:48	7	10	13:28
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	6476	4:35	0:50	2:28	8:45	16	21	2:26
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	8062	11:56	4:06	5:20	36:00	8	11	8:09
Barbur Blvd/Capitol Hwy	6th Ave/College St	11408	9:28	1:45	6:26	14:58	14	17	5:10
5th Ave/College St	Barbur Blvd/Capitol Hwy	11300	10:14	2:25	4:49	19:51	13	17	5:50
5th Ave/College St	Lincoln St east of Naito Pkwy	2024	3:13	0:22	2:49	4:19	7	9	1:02
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	3:08	0:16	2:47	3:56	9	11	0:41
Barbur Blvd/Capitol Hwy	6th Ave/College St	12368	8:49	0:36	7:42	11:15	16	20	2:09
5th Ave/College St	Barbur Blvd/Capitol Hwy	12139	8:01	0:20	7:23	9:31	17	21	1:40
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5708	16:46	8:26	3:07	42:30	4	7	15:02
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3998	14:59	4:12	4:53	31:30	3	4	13:14
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7131	15:43	7:58	3:41	41:22	5	9	13:25

Appendix R

Alternative A2-LA Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

A2-LA PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8801	12:44	3:09	4:44	22:44	8	10	9:20
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9672	19:52	5:15	10:24	41:10	6	7	16:23
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8019	11:17	4:26	5:02	27:38	8	11	8:36
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	9990	17:07	5:06	6:18	42:25	7	9	13:59
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	7219	20:09	4:50	9:36	33:01	4	5	17:33
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	8024	5:52	0:45	3:55	7:41	16	18	3:11
Barbur Blvd/Capitol Hwy	6th Ave/College St	11416	16:59	5:51	5:51	31:19	8	11	12:44
5th Ave/College St	Barbur Blvd/Capitol Hwy	11268	8:54	2:57	4:47	23:28	14	19	4:33
5th Ave/College St	Lincoln St east of Naito Pkwy	2039	3:12	0:22	2:45	4:17	7	8	1:01
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	3:08	0:16	2:47	3:56	9	10	0:42
Barbur Blvd/Capitol Hwy	6th Ave/College St	12366	8:45	0:31	7:53	10:46	16	17	2:05
5th Ave/College St	Barbur Blvd/Capitol Hwy	12139	8:01	0:22	7:12	8:53	17	18	1:38
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5682	15:35	5:34	5:31	45:24	4	6	13:52
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3990	5:48	2:30	2:12	17:40	8	12	4:05
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7155	32:15	12:09	8:46	9:25	3	4	30:02

Appendix S

Alternative A1-BH Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

A1-BH PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8512	10:46	3:39	3:19	26:49	9	13	7:29
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9704	17:11	5:04	7:49	39:13	6	9	13:42
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8233	6:36	3:03	2:53	21:13	14	20	3:52
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	9939	9:37	5:52	3:52	37:10	12	18	6:28
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	6474	3:59	0:51	1:57	7:41	18	24	1:50
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	8097	8:48	3:54	4:01	28:18	10	14	5:52
Barbur Blvd/Capitol Hwy	6th Ave/College St	11407	26:07	6:58	11:46	38:25	5	7	21:54
5th Ave/College St	Barbur Blvd/Capitol Hwy	11237	11:58	4:36	5:53	33:40	11	15	7:36
5th Ave/College St	Lincoln St east of Naito Pkwy	2024	3:00	0:12	2:41	3:34	8	9	0:49
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	3:02	0:13	2:46	3:31	10	11	0:35
Barbur Blvd/Capitol Hwy	6th Ave/College St	11464	7:02	0:45	6:13	9:29	19	22	1:51
5th Ave/College St	Barbur Blvd/Capitol Hwy	11239	6:14	0:11	5:54	6:52	20	24	1:12
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5708	5:25	4:19	1:37	30:46	12	22	3:41
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3996	12:00	3:51	1:53	31:14	4	6	10:16
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7131	5:22	4:08	2:09	30:27	15	26	3:03

Appendix T

Alternative A2-BH-LT Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

A2-BH-LT PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8515	9:41	3:10	3:15	22:53	10	15	6:24
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9705	26:21	5:42	13:41	46:25	4	6	22:55
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8246	5:11	0:47	3:00	7:52	18	23	2:27
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	9969	19:52	5:28	8:14	36:54	6	8	16:42
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	6474	4:46	1:06	2:27	9:17	15	21	2:37
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	7557	6:39	1:55	2:59	17:43	13	18	4:10
Barbur Blvd/Capitol Hwy	6th Ave/College St	11264	9:21	1:50	6:44	16:29	14	18	5:11
5th Ave/College St	Barbur Blvd/Capitol Hwy	11335	11:52	3:16	5:18	25:50	11	15	7:29
5th Ave/College St	Lincoln St east of Naito Pkwy	2024	3:14	0:22	2:49	4:22	7	9	1:03
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	3:03	0:13	2:46	3:32	9	12	0:36
Barbur Blvd/Capitol Hwy	6th Ave/College St	12368	8:41	0:27	7:47	9:54	16	20	2:00
5th Ave/College St	Barbur Blvd/Capitol Hwy	12174	8:05	0:22	7:22	9:05	17	21	1:38
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5708	14:00	5:06	4:36	28:45	5	7	12:16
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3997	13:17	4:00	3:32	28:31	3	5	11:33
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7131	13:20	4:56	4:20	28:23	6	9	11:02

Appendix U

Mitigated Alternative A1 Vissim Model Delay

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Delay Results for PM Peak Hour
Mitigated A1 Delay (Sec)

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left		39		90		26	56
	Thru		1	5	10	56		11
	Right	26				99	24	14
SB	Left					7	118	
	Thru		60	8	12	10	112	68
	Right		54		7		112	83
EB	Left			33		211		59
	Thru			36		204	99	22
	Right	13					97	32
WB	Left				35		43	87
	Thru				31		19	38
	Right				29			18
Intersection Total		**15**	**34**	**12**	**19**	**56**	**84**	**49**

Delay Results for PM Peak Hour
Mitigated A1 Delay (Sec)

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	12		19		12		17	
	Thru	11		12		8		11	
	Right								
SB	Left		70		9		0		0
	Thru		78		10		16		6
	Right				23				9
EB	Left	9		12		28		26	
	Thru		18		24		37		12
	Right	8	15		21	21	29		18
WB	Left		23		25		45		27
	Thru	13	21		15	10	39		21
	Right	12				14			
Intersection Total		**11**	**53**	**13**	**12**	**13**	**29**	**13**	**12**

Delay Results for PM Peak Hour
Mitigated A1 Delay (Sec)

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	8	10			6	12	31	
	Thru	1				9		43	9
	Right					42	11		
SB	Left				12		21		
	Thru			19	0			63	17
	Right			97			6	65	
EB	Left	9					79	29	
	Thru			57			30	35	
	Right			65		34	46		
WB	Left				0		25		
	Thru					64	13		
	Right	0				65	11		
Intersection Total		**4**	**10**	**21**	**15**	**22**	**31**	**52**	**15**

Delay Results for PM Peak Hour
Mitigated A1 Delay (Sec)

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left					41	
	Thru	18		138		46	
	Right		18				
SB	Left		23				
	Thru		28		43	14	15
	Right		31			11	19
EB	Left			48		60	
	Thru		38	17	5	41	
	Right		47	17			
WB	Left					30	36
	Thru				159	41	42
	Right			27		28	
Intersection Total		**18**	**36**	**44**	**69**	**30**	**18**

Delay Results for PM Peak Hour
Mitigated A1 Delay (Sec)

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	94		0		55
	Thru	19		130	159	1
	Right			134	161	1
SB	Left		18	65		102
	Thru			5		194
	Right			3		136
EB	Left			0	39	18
	Thru			0	4	27
	Right		61	0	30	0
WB	Left	205				491
	Thru	200				342
	Right	189				100
Intersection Total		**144**	**27**	**77**	**51**	**122**

Delay Results for PM Peak Hour
Mitigated A1 Delay (Sec)

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left		355	143		
	Thru		323	101	990	
	Right		312	93	1752	
SB	Left		542	82	93	
	Thru		62	27	29	
	Right		26	21	14	
EB	Left		148	0		
	Thru		195	7	6	
	Right	3	193	61		
WB	Left			195		
	Thru	245	126	193		
	Right		139	128		
Intersection Total		**36**	**176**	**75**	**1153**	**#DIV/0!**

Delay Results for PM Peak Hour
Mitigated A1 Delay (Sec)

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left					
	Thru					45
	Right			181	57	65
SB	Left					
	Thru					
	Right	8				
EB	Left					
	Thru					
	Right			202	13	
WB	Left					
	Thru	807				
	Right	934				381
Intersection Total		**697**	**#DIV/0!**	**197**	**23**	**66**

Delay Results for PM Peak Hour
Mitigated A1 Delay (Sec)

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left	387				32	
	Thru	308	44		16	23	48
	Right	0			0	21	49
SB	Left	0			84	29	
	Thru	125	40		2	22	10
	Right	0	33	0		22	11
EB	Left	49					907
	Thru	53	33			3	942
	Right	0					958
WB	Left			9		28	72
	Thru					28	77
	Right				28	13	53
Intersection Total		**215**	**41**	**3**	**17**	**18**	**63**

Delay Results for PM Peak Hour Mitigated A1 Delay (Sec)		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	70
	Thru	36
	Right	35
SB	Left	30
	Thru	25
	Right	17
EB	Left	62
	Thru	45
	Right	63
WB	Left	36
	Thru	30
	Right	19
Intersection Total		**43**

Appendix V

Mitigated Alternative A2-BH Vissim Model Delay

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Delay Results for PM Peak Hour
Mitigated A2-BH Delay (Sec)

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left		37		98		75	36
	Thru		1	7	14	74		10
	Right	26				56	12	9
SB	Left					10	127	
	Thru		189	11	10	2	143	8
	Right		178		7		123	19
EB	Left			37		403		50
	Thru			47		347	78	12
	Right	14				358	47	34
WB	Left				82		28	55
	Thru				93		23	35
	Right				100			22
Intersection Total		**16**	**101**	**15**	**37**	**133**	**106**	**18**

Delay Results for PM Peak Hour
Mitigated A2-BH Delay (Sec)

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	15		15		0		73	
	Thru	11		6		8		36	
	Right								
SB	Left		0		20		53		9
	Thru		240		29		50		16
	Right				49				0
EB	Left	9		14		0		15	
	Thru		38		29		57		20
	Right	7	17		16	14	0		21
WB	Left		49		35		76		29
	Thru	10	28		33	11	65		27
	Right	11				15			
Intersection Total		**11**	**152**	**8**	**29**	**10**	**58**	**44**	**18**

Delay Results for PM Peak Hour
Mitigated A2-BH Delay (Sec)

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	8	11			38	18	67	
	Thru	0				35		34	9
	Right					5	5		
SB	Left				7		15		
	Thru			38	10			42	
	Right			46			7	50	
EB	Left	10				119	22	33	
	Thru						31	17	
	Right			80		14	21		
WB	Left				0		42		
	Thru					26	16		
	Right	0				21	15		
Intersection Total		**4**	**11**	**39**	**14**	**30**	**18**	**39**	**9**

Delay Results for PM Peak Hour
Mitigated A2-BH Delay (Sec)

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left					61	
	Thru			153		39	
	Right		108				
SB	Left		58				
	Thru		59		138	6	29
	Right		65			5	13
EB	Left			52		57	
	Thru		199	36	13	26	
	Right		228	43			
WB	Left					27	37
	Thru				172	0	32
	Right			28		26	
Intersection Total		**10**	**149**	**56**	**90**	**24**	**28**

Delay Results for PM Peak Hour
Mitigated A2-BH Delay (Sec)

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	53		0		
	Thru	17		183	53	
	Right			199	82	
SB	Left		27	69		
	Thru			2		
	Right			1		
EB	Left			0	50	
	Thru			0	1	
	Right		117	0	42	
WB	Left	350				
	Thru	9				
	Right	3				
Intersection Total		**29**	**40**	**107**	**33**	**#DIV/0!**

Delay Results for PM Peak Hour
Mitigated A2-BH Delay (Sec)

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left		173	38		
	Thru		152	23	888	
	Right		99	22	86	
SB	Left		142	27		
	Thru		195	14	29	
	Right		196	13	23	
EB	Left		218	7		
	Thru		282	13	51	
	Right		239	12	764	
WB	Left			18	64	
	Thru		117	42	57	
	Right		43	13	68	
Intersection Total		**#DIV/0!**	**167**	**18**	**228**	**#DIV/0!**

Delay Results for PM Peak Hour
Mitigated A2-BH Delay (Sec)

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left					
	Thru			13		11
	Right			6		0
SB	Left				28	11
	Thru			16		16
	Right					
EB	Left					164
	Thru					155
	Right				40	158
WB	Left			651		0
	Thru					
	Right			543		35
Intersection Total		**#DIV/0!**	**#DIV/0!**	**167**	**32**	**35**

Delay Results for PM Peak Hour
Mitigated A2-BH Delay (Sec)

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left					13	
	Thru			36	14	11	28
	Right				0	9	23
SB	Left				39	35	
	Thru			41	7	16	7
	Right					13	10
EB	Left						436
	Thru					2	450
	Right						456
WB	Left					32	88
	Thru					30	96
	Right				18	15	53
Intersection Total		**#DIV/0!**	**#DIV/0!**	**38**	**14**	**11**	**44**

Delay Results for PM Peak Hour Mitigated A2-BH Delay (Sec)		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	25
	Thru	10
	Right	10
SB	Left	12
	Thru	11
	Right	12
EB	Left	37
	Thru	14
	Right	37
WB	Left	33
	Thru	29
	Right	11
Intersection Total		**16**

Appendix W

Mitigated Alternative A2-LA Vissim Model Delay

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Delay Results for PM Peak Hour
Mitigated A2-LA Delay (Sec)

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left		38		70		30	248
	Thru		1	6	11	58		19
	Right	24				71	28	124
SB	Left					7	282	
	Thru		131	13	13	22	282	112
	Right		121		13		256	110
EB	Left			44		277		59
	Thru			125		644	121	31
	Right	14				373	78	33
WB	Left				64		108	112
	Thru				39		21	58
	Right				30			44
Intersection Total		**16**	**73**	**25**	**20**	**127**	**175**	**93**

Delay Results for PM Peak Hour
Mitigated A2-LA Delay (Sec)

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	15		17		10		17	
	Thru	11		8		8		10	
	Right								
SB	Left		95		13		14		0
	Thru		58		18		18		8
	Right				12				15
EB	Left	9		14		23		42	
	Thru		26		28		36		15
	Right	8	15		20	15	24		21
WB	Left		36		32		36		34
	Thru	8	21		29	9	29		29
	Right	11				13			
Intersection Total		**10**	**42**	**10**	**18**	**10**	**25**	**13**	**15**

Delay Results for PM Peak Hour
Mitigated A2-LA Delay (Sec)

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	9	10			28	116	52	
	Thru	1				33		30	366
	Right					92	92		
SB	Left				23		106		
	Thru			24	0			249	0
	Right			46			47	221	
EB	Left	14				0	60	48	
	Thru			0			81	82	
	Right			67		40	121		
WB	Left				0		50		
	Thru					18	16		
	Right	0				11	13		
Intersection Total		**4**	**10**	**25**	**31**	**35**	**72**	**161**	**366**

Delay Results for PM Peak Hour
Mitigated A2-LA Delay (Sec)

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left					24	
	Thru			122		30	
	Right		31				
SB	Left		29				
	Thru		35		50	4	11
	Right		27			5	25
EB	Left			39		42	
	Thru		57	15	5	10	
	Right		59	17			
WB	Left					20	29
	Thru				138	29	35
	Right			25		20	
Intersection Total		**#DIV/0!**	**45**	**38**	**65**	**18**	**14**

Delay Results for PM Peak Hour
Mitigated A2-LA Delay (Sec)

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	253		0		10
	Thru	23		58	558	0
	Right			56	251	206
SB	Left		9	46		611
	Thru			2		159
	Right			2		99
EB	Left			0	25	30
	Thru			0	7	14
	Right		29	0	4	55
WB	Left	88				8
	Thru	6				7
	Right	3				0
Intersection Total		**43**	**13**	**36**	**98**	**233**

Delay Results for PM Peak Hour
Mitigated A2-LA Delay (Sec)

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left		93	264		0
	Thru		53	392	285	597
	Right		61	251	313	549
SB	Left		71	106	59	8
	Thru		49	43	5	4
	Right		9	63	5	3
EB	Left		51	109		436
	Thru	53	42	17	6	66
	Right		14	17		0
WB	Left			296		91
	Thru	28	141	301		0
	Right		242	287		130
Intersection Total		**51**	**87**	**174**	**276**	**253**

Delay Results for PM Peak Hour
Mitigated A2-LA Delay (Sec)

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left					
	Thru					72
	Right			32	23	20
SB	Left					
	Thru					162
	Right	247				89
EB	Left					230
	Thru					208
	Right			37	4	230
WB	Left					0
	Thru	288				45
	Right	308				25
Intersection Total		**286**	**#DIV/0!**	**36**	**9**	**127**

Delay Results for PM Peak Hour
Mitigated A2-LA Delay (Sec)

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left	66				14	
	Thru	71	271		56	4	295
	Right	0			30	7	302
SB	Left	42				12	122
	Thru	36	1	0	41	21	12
	Right	32	1	0		5	10
EB	Left					0	2102
	Thru	27	10	8		0	0
	Right	41				16	2158
WB	Left					42	129
	Thru					52	125
	Right				31	29	104
Intersection Total		**56**	**153**	**0**	**46**	**13**	**144**

Delay Results for PM Peak Hour Mitigated A2-LA Delay (Sec)		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	335
	Thru	261
	Right	281
SB	Left	112
	Thru	40
	Right	108
EB	Left	
	Thru	14
	Right	
WB	Left	40
	Thru	79
	Right	30
Intersection Total		**116**

Appendix X

Mitigated Alternative A1-BH Vissim Model Delay

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Delay Results for PM Peak Hour
Mitigated A1-BH Delay (Sec)

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left		37		87		40	77
	Thru		1	7	14	72		10
	Right	25				57	9	21
SB	Left					9	136	
	Thru		142	12	11	6	157	46
	Right		124		6		141	69
EB	Left			39		258		47
	Thru			57		332	67	13
	Right	14				314	48	34
WB	Left				54		43	61
	Thru				53		26	34
	Right				68			21
Intersection Total		**16**	**75**	**17**	**29**	**108**	**98**	**39**

Delay Results for PM Peak Hour
Mitigated A1-BH Delay (Sec)

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	14		15		11		37	
	Thru	11		6		9		15	
	Right								
SB	Left		0		16		32		0
	Thru		127		30		32		15
	Right				46				0
EB	Left	8		14		29		20	
	Thru		26		0		47		20
	Right	7	15		19	19	0		21
WB	Left		30		35		51		26
	Thru	9	25		29	10	45		24
	Right	11				14			
Intersection Total		**10**	**82**	**8**	**29**	**11**	**40**	**20**	**17**

Delay Results for PM Peak Hour
Mitigated A1-BH Delay (Sec)

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	8	11			12	16	60	
	Thru	0				11		35	12
	Right					47	14		
SB	Left				9		11		
	Thru			22	9			74	
	Right			82			6	93	
EB	Left	10					37	32	
	Thru			67			27	34	
	Right					27	25		
WB	Left				0		33		
	Thru					43	17		
	Right	0				25	13		
Intersection Total		**3**	**11**	**24**	**15**	**17**	**20**	**63**	**12**

Delay Results for PM Peak Hour
Mitigated A1-BH Delay (Sec)

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left					81	
	Thru	21		161		49	
	Right						
SB	Left		13				
	Thru		65		99	8	26
	Right		52			8	21
EB	Left			44		66	
	Thru		235	36	12	33	
	Right		241	42			
WB	Left					24	28
	Thru				175	0	69
	Right			28		42	
Intersection Total		**21**	**163**	**56**	**88**	**30**	**29**

Delay Results for PM Peak Hour
Mitigated A1-BH Delay (Sec)

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	122		0		
	Thru	19		217	126	
	Right			234	129	
SB	Left		25	97		
	Thru			3		
	Right			3		
EB	Left			0	51	
	Thru			0	4	
	Right		128	0	38	
WB	Left	267				
	Thru	244				
	Right	224				
Intersection Total		**178**	**40**	**121**	**48**	**#DIV/0!**

Delay Results for PM Peak Hour
Mitigated A1-BH Delay (Sec)

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left		122	141		
	Thru		100	79	286	
	Right		62	84	89	
SB	Left		289	78		
	Thru		175	27	41	
	Right		154	24	33	
EB	Left		193	56		
	Thru		247	17	53	
	Right		216	28	215	
WB	Left			45	117	
	Thru		101	46	163	
	Right		70	23	74	
Intersection Total		**#DIV/0!**	**184**	**55**	**121**	**#DIV/0!**

Delay Results for PM Peak Hour
Mitigated A1-BH Delay (Sec)

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left					
	Thru			15		14
	Right			10		0
SB	Left				34	73
	Thru			24		21
	Right					0
EB	Left					99
	Thru					94
	Right				50	97
WB	Left			207		29
	Thru					41
	Right			157		34
Intersection Total		**#DIV/0!**	**#DIV/0!**	**78**	**39**	**27**

Delay Results for PM Peak Hour
Mitigated A1-BH Delay (Sec)

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left					32	
	Thru			31	13	27	26
	Right				0	30	21
SB	Left				71	72	
	Thru			46	9	42	8
	Right			59		64	9
EB	Left						509
	Thru			33		5	526
	Right						532
WB	Left					43	168
	Thru					43	182
	Right				22	13	0
Intersection Total		**#DIV/0!**	**#DIV/0!**	**39**	**18**	**26**	**52**

Delay Results for PM Peak Hour Mitigated A1-BH Delay (Sec)		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	145
	Thru	103
	Right	105
SB	Left	30
	Thru	25
	Right	56
EB	Left	41
	Thru	15
	Right	35
WB	Left	29
	Thru	38
	Right	12
Intersection Total		**66**

Appendix Y

Mitigated Alternative A2-BH-LT Vissim Model Delay

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Delay Results for PM Peak Hour
Mitigated A2-BH-LT Delay (Sec)

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left		37		76		107	50
	Thru		1	6	14	64		10
	Right	25				53	21	10
SB	Left					9	89	
	Thru		62	9	9	2	103	16
	Right		52		4		106	26
EB	Left			36		125		54
	Thru			43		101	104	15
	Right	14				144	60	33
WB	Left				38		46	56
	Thru				36		22	35
	Right				46			23
Intersection Total		**16**	**35**	**14**	**21**	**54**	**87**	**21**

Delay Results for PM Peak Hour
Mitigated A2-BH-LT Delay (Sec)

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	12		14		0		109	
	Thru	11		6		8		47	
	Right								
SB	Left		0		57		44		14
	Thru		236		72		51		23
	Right				100				0
EB	Left	8		14		0		17	
	Thru		41		73		77		33
	Right	8	18		100	17	0		26
WB	Left		46		50		87		34
	Thru	9	27		46	18	74		32
	Right	11				18			
Intersection Total		**10**	**150**	**7**	**68**	**11**	**65**	**60**	**25**

Delay Results for PM Peak Hour
Mitigated A2-BH-LT Delay (Sec)

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	12	11			52	29	56	
	Thru	1				54		33	8
	Right					18	18		
SB	Left				8		24		
	Thru			42	8			80	
	Right			96			11	108	
EB	Left	18				115	33	38	
	Thru			0			43	34	
	Right			87		16	37		
WB	Left				0		39		
	Thru					50	21		
	Right	0				41	19		
Intersection Total		**6**	**11**	**44**	**13**	**48**	**29**	**64**	**8**

Delay Results for PM Peak Hour
Mitigated A2-BH-LT Delay (Sec)

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left					21	
	Thru			158		49	
	Right		113				
SB	Left		72				
	Thru		87		150	5	33
	Right		79			5	34
EB	Left			46		81	
	Thru		199	38	16	31	
	Right		231	51			
WB	Left					24	38
	Thru				153	0	37
	Right			26		88	
Intersection Total		**8**	**158**	**60**	**88**	**34**	**33**

Delay Results for PM Peak Hour
Mitigated A2-BH-LT Delay (Sec)

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	51		0		
	Thru	41		145	136	
	Right			150	149	
SB	Left		25	61		
	Thru			2		
	Right			2		
EB	Left			0	71	
	Thru			0	1	
	Right		104	0	36	
WB	Left	311				
	Thru	12				
	Right	16				
Intersection Total		**37**	**37**	**87**	**54**	**#DIV/0!**

Delay Results for PM Peak Hour
Mitigated A2-BH-LT Delay (Sec)

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left		235	153		
	Thru		212	88	868	
	Right		182	73	95	
SB	Left		247	35		
	Thru		163	17	41	
	Right		178	14	40	
EB	Left		214	7		
	Thru		274	12	49	
	Right		222	16	728	
WB	Left			95	270	
	Thru		101	43	263	
	Right		68	84	234	
Intersection Total		**#DIV/0!**	**178**	**53**	**297**	**#DIV/0!**

Delay Results for PM Peak Hour
Mitigated A2-BH-LT Delay (Sec)

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left					
	Thru			25		16
	Right			15		0
SB	Left			576	35	17
	Thru			17		18
	Right					
EB	Left					128
	Thru					112
	Right				65	113
WB	Left			730		0
	Thru					
	Right			60		39
Intersection Total		**#DIV/0!**	**#DIV/0!**	**192**	**46**	**31**

Delay Results for PM Peak Hour
Mitigated A2-BH-LT Delay (Sec)

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left					18	
	Thru			38	15	15	46
	Right				0	13	41
SB	Left				53	33	
	Thru			46	7	18	6
	Right					28	7
EB	Left						264
	Thru					2	285
	Right						283
WB	Left					35	75
	Thru					34	79
	Right				19	13	48
Intersection Total		**#DIV/0!**	**#DIV/0!**	**42**	**15**	**13**	**42**

Delay Results for PM Peak Hour Mitigated A2-BH-LT Delay (Sec)		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	23
	Thru	14
	Right	10
SB	Left	14
	Thru	12
	Right	7
EB	Left	35
	Thru	14
	Right	35
WB	Left	34
	Thru	36
	Right	43
Intersection Total		**17**

Appendix Z

Mitigated Alternative A1 Vissim Model Queue Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Queuing Results for PM Peak Hour
Mitigated A1 95th Percentile Queue

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left	-	113	72	224	291	91	438
	Thru	-	-	288	272	331	-	146
	Right	231	-	-	-	-	154	-
SB	Left	-	-	-	197	229	-	-
	Thru	-	2559	283	265	251	-	764
	Right	-	-	-	-	-	-	-
EB	Left	-	-	-	-	1989	-	1435
	Thru	-	-	236	-	1984	908	280
	BAT	-	-	-	-	1981	-	1512
WB	Left	-	-	-	-	-	-	459
	Thru	-	-	-	394	-	282	109
	Right	-	-	-	84	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1 95th Percentile Queue

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	-	-	-	-	-	-	-	-
	Thru	151	-	173	-	123	-	214	-
	Right	-	-	-	-	-	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	848	-	265	-	274	-	191
	Right	-	-	-	-	-	-	-	-
EB	Left	-	-	-	-	-	-	-	-
	Thru	89	61	46	44	178	154	-	68
	BAT	-	-	-	-	-	-	47	-
WB	Left	-	-	-	-	-	-	-	-
	Thru	173	177	-	100	109	268	-	308
	Right	-	-	-	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1 95th Percentile Queue

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	-	457	-	-	-	-	112	-
	Thru	92	-	-	-	67	20	130	204
	Right	-	-	-	-	206	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	-	275	226	-	23	1964	572
	Right	-	-	-	-	-	-	-	-
EB	Left	41	-	-	-	-	0	67	-
	Thru	-	-	-	-	308	470	-	-
	BAT	-	-	23	-	-	-	312	-
WB	Left	-	-	-	-	-	23	-	-
	Thru	-	-	-	-	302	185	-	-
	Right	0	-	-	45	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1 95th Percentile Queue

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left	-	-	-	-	-	-
	Thru	222	-	412	-	273	-
	Right	-	275	-	-	-	-
SB	Left	-	-	-	-	-	-
	Thru	-	494	-	-	469	361
	Right	-	-	-	436	-	-
EB	Left	0	-	177	-	53	-
	Thru	-	622	343	154	-	-
	BAT	-	-	-	-	-	-
WB	Left	-	-	-	-	-	-
	Thru	-	-	-	-	271	238
	Right	-	-	198	573	-	-

Queuing Results for PM Peak Hour
Mitigated A1 95th Percentile Queue

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	177	-	-	-	0
	Thru	255	-	1244	1051	-
	Right	-	-	-	-	-
SB	Left	-	433	282	-	1110
	Thru	-	-	255	-	-
	Right	-	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	251	0	299	22
	BAT	-	-	-	242	-
WB	Left	-	-	-	-	-
	Thru	1377	-	-	-	1236
	Right	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1 95th Percentile Queue

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left	-	788	1433	-	-
	Thru	-	787	1434	-	-
	Right	-	-	-	-	-
SB	Left	-	1574	837	104	-
	Thru	-	1572	816	-	-
	Right	-	1301	-	-	-
EB	Left	-	2288	-	-	-
	Thru	-	2301	17	-	19
	BAT	-	-	-	22	-
WB	Left	-	-	-	-	-
	Thru	-	8469	364	-	40
	Right	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1 95th Percentile Queue

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left	-	-	-	-	-
	Thru	-	-	-	-	-
	Right	-	-	-	456	-
SB	Left	-	-	1904	-	-
	Thru	-	-	-	-	-
	Right	41	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	-	-	2527	-
	BAT	-	-	-	-	-
WB	Left	-	-	-	-	-
	Thru	-	-	-	-	-
	Right	-	-	-	-	356

Queuing Results for PM Peak Hour
Mitigated A1 95th Percentile Queue

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left	-	-	-	-	-	-
	Thru	1527	-	1406	838	549	3203
	Right	-	-	481	-	-	-
SB	Left	-	-	-	1334	-	-
	Thru	18	-	574	211	270	511
	Right	-	-	-	-	-	-
EB	Left	-	204	-	-	-	-
	Thru	-	-	21	-	-	958
	BAT	670	-	-	-	155	-
WB	Left	-	-	10356	-	-	-
	Thru	-	-	-	-	62	346
	Right	-	-	-	123	-	219

Queuing Results for PM Peak Hour Mitigated A1 95th Percentile Queue		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	1433
	Thru	1135
	Right	-
SB	Left	128
	Thru	525
	Right	-
EB	Left	-
	Thru	757
	BAT	18
WB	Left	-
	Thru	83
	Right	-

Appendix AA

Mitigated Alternative A2-BH Vissim Model Queue Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Queuing Results for PM Peak Hour
Mitigated A2-BH 95th Percentile Queue

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left	-	114	69	213	269	546	49
	Thru	-	-	293	274	382	-	127
	Right	289	-	-	-	-	60	-
SB	Left	-	-	-	266	289	-	-
	Thru	-	2561	283	265	44	-	127
	Right	-	-	-	-	-	-	-
EB	Left	-	-	-	-	2122	-	155
	Thru	-	-	318	-	2117	236	279
	BAT	-	-	-	-	77	-	156
WB	Left	-	-	-	-	-	-	164
	Thru	-	-	-	796	-	131	201
	Right	-	-	-	150	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH 95th Percentile Que

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	-	-	-	-	-	-	-	-
	Thru	154	-	268	-	119	-	476	-
	Right	-	-	-	-	-	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	3092	-	667	-	292	-	275
	Right	-	-	-	-	-	-	-	-
EB	Left	-	-	-	-	-	-	-	-
	Thru	69	71	46	46	89	143	-	87
	BAT	-	-	-	-	-	-	23	-
WB	Left	-	-	-	-	-	-	-	-
	Thru	178	279	-	173	178	271	-	319
	Right	-	-	-	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH 95th Percentile Que

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	-	457	-	-	-	-	91	-
	Thru	106	-	-	-	816	20	224	125
	Right	-	-	-	-	224	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	-	288	177	-	21	3264	427
	Right	-	-	-	-	-	-	-	-
EB	Left	46	-	-	-	61	21	66	-
	Thru	-	-	-	-	158	279	-	-
	BAT	-	-	23	-	-	-	218	-
WB	Left	-	-	-	-	-	43	-	-
	Thru	-	-	-	-	265	203	-	-
	Right	0	-	-	66	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH 95th Percentile Que

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left	-	-	-	-	-	-
	Thru	-	-	427	-	270	-
	Right	-	388	-	-	-	-
SB	Left	-	-	-	-	-	-
	Thru	-	495	-	-	363	363
	Right	-	-	-	701	-	-
EB	Left	22	-	216	-	67	-
	Thru	-	1111	448	239	-	-
	BAT	-	-	-	-	-	-
WB	Left	-	-	-	-	-	-
	Thru	-	-	-	-	176	109
	Right	-	-	204	617	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH 95th Percentile Que

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	200	-	-	295	0
	Thru	268	-	1247	405	-
	Right	-	-	-	-	-
SB	Left	-	312	93	-	0
	Thru	-	-	139	-	-
	Right	-	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	266	0	289	44
	BAT	-	-	-	59	-
WB	Left	-	-	-	-	-
	Thru	1365	-	-	-	934
	Right	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH 95th Percentile Que

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left	-	770	22	-	0
	Thru	-	784	370	8195	-
	Right	-	-	-	-	-
SB	Left	-	1447	44	693	100
	Thru	-	1440	721	680	-
	Right	-	-	-	-	-
EB	Left	-	45	-	-	-
	Thru	-	1312	18	-	19
	BAT	62	-	-	48	-
WB	Left	-	-	-	1295	-
	Thru	-	622	66	-	42
	Right	-	175	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH 95th Percentile Que

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left	-	-	-	-	-
	Thru	-	-	135	-	280
	Right	-	-	462	901	-
SB	Left	-	-	-	-	-
	Thru	-	-	511	-	563
	Right	22	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	-	-	649	1725
	BAT	-	-	-	-	-
WB	Left	-	-	-	-	-
	Thru	-	-	7528	-	192
	Right	-	-	83	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH 95th Percentile Queu

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left	-	-	-	-	-	-
	Thru	0	1259	-	756	336	1145
	Right	-	359	-	-	-	-
SB	Left	-	1699	-	633	-	-
	Thru	-	-	-	273	221	506
	Right	-	-	-	-	-	-
EB	Left	-	165	-	-	-	-
	Thru	-	-	37	-	-	958
	BAT	71	-	-	-	116	-
WB	Left	-	-	-	-	-	-
	Thru	-	867	-	-	88	445
	Right	-	-	-	98	-	42

Queuing Results for PM Peak Hour Mitigated A2-BH 95th Percentile Que		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	568
	Thru	204
	Right	-
SB	Left	141
	Thru	510
	Right	-
EB	Left	-
	Thru	-
	BAT	251
WB	Left	-
	Thru	69
	Right	-

Appendix BB

Mitigated Alternative A2-LA Vissim Model Queue Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Queuing Results for PM Peak Hour
Mitigated A2-LA 95th Percentile Queue

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left	-	109	66	91	134	105	600
	Thru	-	-	290	274	335	-	271
	Right	249	-	-	-	-	129	-
SB	Left	-	-	-	183	287	-	-
	Thru	-	2561	282	265	304	-	762
	Right	-	-	-	-	-	-	-
EB	Left	-	-	-	-	2116	-	344
	Thru	-	-	956	-	2110	586	1623
	BAT	-	-	-	-	2108	-	2861
WB	Left	-	-	-	-	-	-	713
	Thru	-	-	-	509	-	264	270
	Right	-	-	-	96	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-LA 95th Percentile Queu

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	-	-	-	-	-	-	-	-
	Thru	170	-	208	-	127	-	258	-
	Right	-	-	-	-	-	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	834	-	642	-	276	-	272
	Right	-	-	-	-	-	-	-	-
EB	Left	-	-	-	-	-	-	-	-
	Thru	87	68	46	61	90	69	-	88
	BAT	-	-	-	-	-	-	46	-
WB	Left	-	-	-	-	-	-	-	-
	Thru	130	265	-	89	88	261	-	368
	Right	-	-	-	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-LA 95th Percentile Queu

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	-	447	-	-	-	-	46	-
	Thru	148	-	-	-	277	140	154	4436
	Right	-	-	-	-	503	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	-	273	199	-	84	3248	585
	Right	-	-	-	-	-	-	-	-
EB	Left	66	-	-	-	0	23	66	-
	Thru	-	-	-	-	356	960	-	-
	BAT	-	-	23	-	-	-	345	-
WB	Left	-	-	-	-	-	43	-	-
	Thru	-	-	-	-	117	201	-	-
	Right	0	-	-	62	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-LA 95th Percentile Queu

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left	-	-	-	-	-	-
	Thru	-	-	406	-	270	-
	Right	-	357	-	-	-	-
SB	Left	-	-	-	-	-	-
	Thru	-	495	-	-	247	349
	Right	-	-	-	429	-	-
EB	Left	0	-	104	-	54	-
	Thru	-	1096	351	150	-	-
	BAT	-	-	-	-	-	-
WB	Left	-	-	-	-	-	-
	Thru	-	-	-	-	271	164
	Right	-	-	212	616	-	-

Queuing Results for PM Peak Hour
Mitigated A2-LA 95th Percentile Queu

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	215	-	-	1096	-
	Thru	175	-	1222	227	-
	Right	-	-	-	-	-
SB	Left	-	283	65	-	1070
	Thru	-	-	150	-	-
	Right	-	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	205	0	265	41
	BAT	-	-	-	223	-
WB	Left	-	-	-	-	-
	Thru	1317	-	-	-	40
	Right	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-LA 95th Percentile Queu

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left	-	24	0	-	0
	Thru	-	143	2122	-	-
	Right	-	-	-	-	-
SB	Left	-	1162	1014	53	81
	Thru	-	1160	1005	-	-
	Right	-	17	-	-	-
EB	Left	-	44	-	-	-
	Thru	-	498	21	-	35
	BAT	-	-	-	21	-
WB	Left	-	-	-	-	-
	Thru	-	8468	358	-	84
	Right	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-LA 95th Percentile Queu

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left	-	-	-	-	-
	Thru	-	-	-	-	561
	Right	-	-	-	420	-
SB	Left	-	-	859	-	-
	Thru	-	-	-	-	8157
	Right	250	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	-	3180	-	1781
	BAT	-	-	-	-	-
WB	Left	-	-	-	-	-
	Thru	-	-	-	-	139
	Right	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-LA 95th Percentile Queu

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left	-	-	-	-	-	-
	Thru	670	1510	-	831	441	3647
	Right	-	-	-	-	-	-
SB	Left	-	77	-	-	-	547
	Thru	0	-	-	1307	412	528
	Right	-	-	-	-	-	-
EB	Left	-	93	-	-	-	-
	Thru	-	-	20	-	21	962
	BAT	103	-	-	-	-	-
WB	Left	-	-	-	-	-	-
	Thru	-	-	-	-	170	479
	Right	-	-	-	178	-	449

Queuing Results for PM Peak Hour Mitigated A2-LA 95th Percentile Queu		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	1590
	Thru	1591
	Right	-
SB	Left	-
	Thru	178
	Right	558
EB	Left	706
	Thru	703
	BAT	-
WB	Left	-
	Thru	120
	Right	-

Appendix CC

Mitigated Alternative A1-BH Vissim Model Queue Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Queuing Results for PM Peak Hour
Mitigated A1-BH 95th Percentile Queue

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left	-	129	115	219	359	208	474
	Thru	-	-	293	274	433	-	141
	Right	251	-	-	-	-	21	-
SB	Left	-	-	-	266	287	-	-
	Thru	-	2561	283	265	60	-	748
	Right	-	-	-	-	-	-	-
EB	Left	-	-	-	-	2132	-	23
	Thru	-	-	362	-	2127	234	232
	BAT	-	-	-	-	1862	-	184
WB	Left	-	-	-	-	-	-	166
	Thru	-	-	-	719	-	284	215
	Right	-	-	-	86	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1-BH 95th Percentile Que

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	-	-	-	-	-	-	-	-
	Thru	154	-	196	-	112	-	405	-
	Right	-	-	-	-	-	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	1650	-	777	-	271	-	277
	Right	-	-	-	-	-	-	-	-
EB	Left	-	-	-	-	-	-	-	-
	Thru	84	66	46	45	132	155	-	82
	BAT	-	-	-	-	-	-	23	-
WB	Left	-	-	-	-	-	-	-	-
	Thru	156	261	-	180	146	264	-	284
	Right	-	-	-	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1-BH 95th Percentile Que

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	-	457	-	-	-	-	71	-
	Thru	64	-	-	-	107	39	118	310
	Right	-	-	-	-	203	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	-	278	181	-	21	3275	536
	Right	-	-	-	-	-	-	-	-
EB	Left	42	-	-	-	-	21	67	-
	Thru	-	-	-	-	198	285	-	-
	BAT	-	-	23	-	-	-	311	-
WB	Left	-	-	-	-	-	23	-	-
	Thru	-	-	-	-	300	203	-	-
	Right	0	-	-	64	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1-BH 95th Percentile Que

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left	-	-	-	-	-	-
	Thru	241	-	410	-	272	-
	Right	-	383	-	-	-	-
SB	Left	-	-	-	-	-	-
	Thru	-	495	-	-	386	364
	Right	-	-	-	684	-	-
EB	Left	21	-	137	-	137	-
	Thru	-	1119	449	239	-	-
	BAT	-	-	-	-	-	-
WB	Left	-	-	-	-	-	-
	Thru	-	-	-	-	273	210
	Right	-	-	204	578	-	-

Queuing Results for PM Peak Hour
Mitigated A1-BH 95th Percentile Que

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	183	-	-	-	33
	Thru	267	-	1247	921	-
	Right	-	-	-	-	-
SB	Left	-	297	189	-	91
	Thru	-	-	174	-	-
	Right	-	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	288	0	292	62
	BAT	-	-	-	247	-
WB	Left	-	-	-	-	-
	Thru	1317	-	-	-	1208
	Right	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1-BH 95th Percentile Queu

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left	-	177	1152	-	-
	Thru	-	311	1308	7194	-
	Right	-	-	-	-	-
SB	Left	-	1516	114	693	-
	Thru	-	1516	1017	682	-
	Right	-	-	-	-	-
EB	Left	-	43	-	-	-
	Thru	-	1291	21	-	0
	BAT	248	-	-	46	-
WB	Left	-	-	-	1994	-
	Thru	-	595	147	-	44
	Right	-	80	-	-	-

Queuing Results for PM Peak Hour
Mitigated A1-BH 95th Percentile Que

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left	-	-	-	-	-
	Thru	-	-	205	-	284
	Right	-	-	502	903	-
SB	Left	-	-	-	-	87
	Thru	-	-	2161	-	567
	Right	21	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	-	-	741	770
	BAT	-	-	-	-	-
WB	Left	-	-	-	-	-
	Thru	-	-	5613	-	164
	Right	-	-	207	-	-

Queuing Results for PM Peak Hour
Mitigated A1-BH 95th Percentile Queu

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left	-	-	-	-	-	-
	Thru	0	619	-	752	554	951
	Right	-	674	-	-	-	-
SB	Left	-	780	-	1041	-	-
	Thru	-	-	-	589	427	509
	Right	-	-	-	-	-	-
EB	Left	-	205	-	-	-	-
	Thru	-	-	21	-	-	958
	BAT	88	-	-	-	234	-
WB	Left	-	-	-	-	-	-
	Thru	-	962	-	-	91	452
	Right	-	-	-	192	-	0

Queuing Results for PM Peak Hour Mitigated A1-BH 95th Percentile Que		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	1580
	Thru	1580
	Right	-
SB	Left	526
	Thru	527
	Right	-
EB	Left	-
	Thru	303
	BAT	238
WB	Left	-
	Thru	64
	Right	-

Appendix DD

Mitigated Alternative A2-BH-LT Vissim Model Queue Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Queuing Results for PM Peak Hour
Mitigated A2-BH-LT 95th Percentile Queue

Study Intersection No.		2	3	4	6	8	12	13
Approach	**Movement**	**Naito/Hawthorne**	**Naito/Jefferson**	**Naito/Columbia**	**Naito/Clay**	**Naito/Market**	**1st/Harrison**	**Naito/Harrison**
NB	Left	-	116	70	206	220	612	114
	Thru	-	-	292	274	328	-	125
	Right	247	-	-	-	-	65	-
SB	Left	-	-	-	266	289	-	-
	Thru	-	2215	282	264	46	-	416
	Right	-	-	-	-	-	-	-
EB	Left	-	-	-	-	1676	-	91
	Thru	-	-	323	-	1671	291	307
	BAT	-	-	-	-	550	-	173
WB	Left	-	-	-	-	-	-	160
	Thru	-	-	-	580	-	210	188
	Right	-	-	-	73	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH-LT 95th Percentile Q

Study Intersection No.		19	20	21	22	23	24	25	26
Approach	**Movement**	**6th/Hall St**	**5th/Hall**	**4th/Hall**	**Broadway/College**	**6th/College**	**5th/College**	**4th/College**	**Broadway/Jackson**
NB	Left	-	-	-	-	-	-	-	-
	Thru	157	-	247	-	121	-	485	-
	Right	-	-	-	-	-	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	1792	-	985	-	291	-	277
	Right	-	-	-	-	-	-	-	-
EB	Left	-	-	-	-	-	-	-	-
	Thru	72	68	46	107	101	207	-	107
	BAT	-	-	-	-	-	-	23	-
WB	Left	-	-	-	-	-	-	-	-
	Thru	158	262	-	223	179	287	-	389
	Right	-	-	-	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH-LT 95th Percentile Q

Study Intersection No.		27	28	29	30	31	33	34	35
Approach	**Movement**	**6th/Jackson**	**6th/I-405 On-Ramp**	**5th/Jackson**	**5th/Lincoln**	**4th/Lincoln**	**2nd/Lincoln**	**1st/Lincoln**	**Naito/Lincoln**
NB	Left	-	448	-	-	-	-	92	-
	Thru	165	-	-	-	836	20	239	149
	Right	-	-	-	-	313	-	-	-
SB	Left	-	-	-	-	-	-	-	-
	Thru	-	-	282	139	-	21	2818	535
	Right	-	-	-	-	-	-	-	-
EB	Left	67	-	-	-	44	21	49	-
	Thru	-	-	-	-	138	379	-	-
	BAT	-	-	23	-	-	-	311	-
WB	Left	-	-	-	-	-	40	-	-
	Thru	-	-	-	-	514	287	-	-
	Right	0	-	-	63	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH-LT 95th Percentile Q

Study Intersection No.		36	37	38	39	40	41
Approach	**Movement**	**4th/Grant**	**Broadway/I-405 SB Off-Ramp**	**Broadway/6th**	**Broadway/5th**	**4th/Caruthers**	**5th/Caruthers**
NB	Left	-	-	-	-	-	-
	Thru	-	-	427	-	270	-
	Right	-	384	-	-	-	-
SB	Left	-	-	-	-	-	-
	Thru	-	516	-	-	341	365
	Right	-	-	-	717	-	-
EB	Left	22	-	158	-	69	-
	Thru	-	1104	449	239	-	-
	BAT	-	-	-	-	-	-
WB	Left	-	-	-	-	-	-
	Thru	-	-	-	-	307	111
	Right	-	-	198	623	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH-LT 95th Percentile Q

Study Intersection No.		42	43	44	45	46
Approach	**Movement**	**4th/Caruthers/Broadway**	**5th/Sheridan**	**6th/Terwillige/Sheridan**	**4th/Barbur/Sheridan St**	**1st/Sheridan**
NB	Left	198	-	-	373	-
	Thru	287	-	1240	1071	-
	Right	-	-	-	-	-
SB	Left	-	312	88	-	995
	Thru	-	-	183	-	-
	Right	-	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	251	0	300	285
	BAT	-	-	-	59	-
WB	Left	-	-	-	-	-
	Thru	1398	-	-	-	1140
	Right	-	-	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH-LT 95th Percentile Q

Study Intersection No.		47	48	52	56	58
Approach	**Movement**	**Naito/Sheridan**	**1st/Arthur**	**Barbur/Hooker**	**Kelly/Corbett/Porter/Hood**	**Barbur/Woods**
NB	Left	-	770	21	-	0
	Thru	-	835	2349	8196	-
	Right	-	-	-	-	-
SB	Left	-	1460	64	1250	93
	Thru	-	1457	738	1236	-
	Right	-	-	-	-	-
EB	Left	-	45	-	-	-
	Thru	-	1311	18	-	19
	BAT	623	-	-	46	-
WB	Left	-	-	-	2436	-
	Thru	-	1285	345	-	84
	Right	-	1280	-	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH-LT 95th Percentile Q

Study Intersection No.		59	60	61	62	69
Approach	**Movement**	**Water/Ross Island Bridge**	**Hood/Macadam**	**Naito/Ross Island Bridge**	**Kelly/Ross Island Bridge**	**Naito/Gibbs**
NB	Left	-	-	-	-	-
	Thru	-	-	226	-	281
	Right	-	-	500	903	-
SB	Left	-	-	319	-	-
	Thru	-	-	513	-	537
	Right	20	-	-	-	-
EB	Left	-	-	-	-	-
	Thru	-	-	-	755	1029
	BAT	-	-	-	-	-
WB	Left	-	-	-	-	-
	Thru	-	-	8529	-	194
	Right	-	-	7528	-	-

Queuing Results for PM Peak Hour
Mitigated A2-BH-LT 95th Percentile Q

Study Intersection No.		70	77	78	80	81	82
Approach	**Movement**	**Kelly/Gibbs**	**Barbur/Lane**	**Barbur/Abernathy**	**Barbur/Bancroft**	**Corbett/Bancroft**	**Barbur/Hamilton**
NB	Left	-	-	-	-	-	-
	Thru	0	1530	-	756	408	1867
	Right	-	523	-	-	-	-
SB	Left	-	1925	-	770	-	-
	Thru	-	-	-	232	248	418
	Right	-	-	-	-	-	-
EB	Left	-	204	-	-	-	-
	Thru	-	-	21	-	-	744
	BAT	89	-	-	-	156	-
WB	Left	-	-	-	-	-	-
	Thru	-	866	-	-	89	359
	Right	-	-	-	164	-	41

Queuing Results for PM Peak Hour Mitigated A2-BH-LT 95th Percentile Q		
Study Intersection No.		83
Approach	**Movement**	**Hamilton/Corbett**
NB	Left	282
	Thru	216
	Right	-
SB	Left	107
	Thru	509
	Right	-
EB	Left	-
	Thru	-
	BAT	237
WB	Left	-
	Thru	70
	Right	-

Appendix EE

Mitigated Alternative A1 Vissim Model Queue Plots

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Alternative A1 – Mitigated: Full Study Area

Barbur Representative Alignment & Mitigations

A1 - Mitigated
Earthstar Geographics SIO
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© 2016 Microsoft Corporation
Columbia St
Market St
Harrison St
Hawthorne Bridge
Marquam Bridge
Terwilliger Blvd
Ross Island Bridge
Barbur Blvd
Naito Pkwy
Bancroft St
Hamilton St
SW Corbett Ave
Barbur Blvd
SW Capitol Hwy
00:00:00
2000 ft
4:00 – 4:15 PM

A1 - Mitigated
Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
Columbia St
Market St
Harrison St
Hawthorne Bridge
Marquam Bridge
Terwilliger Blvd
Ross Island Bridge
Barbur Blvd
Naito Pkwy
Bancroft St
Hamilton St
SW Corbett Ave
Barbur Blvd
SW Capitol Hwy
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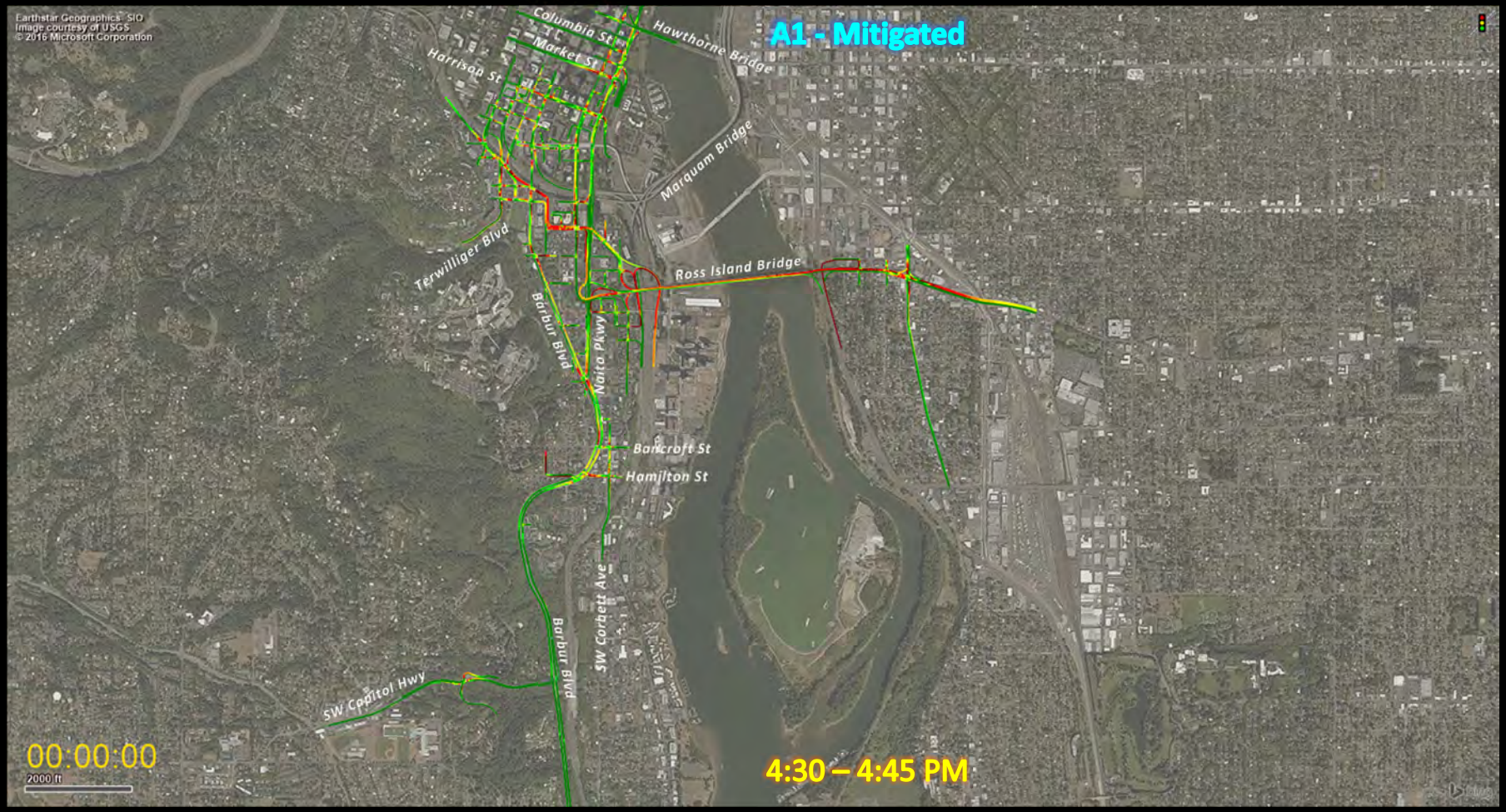
2000 ft
4:15 – 4:30 PM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Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
Columbia St
Market St
Harrison St
Hawthorne Bridge
Marquam Bridge
Terwilliger Blvd
Ross Island Bridge
Barbur Blvd
Naito Pkwy
Bancroft St
Hamilton St
SW Corbett Ave
Barbur Blvd
SW Capitol Hwy
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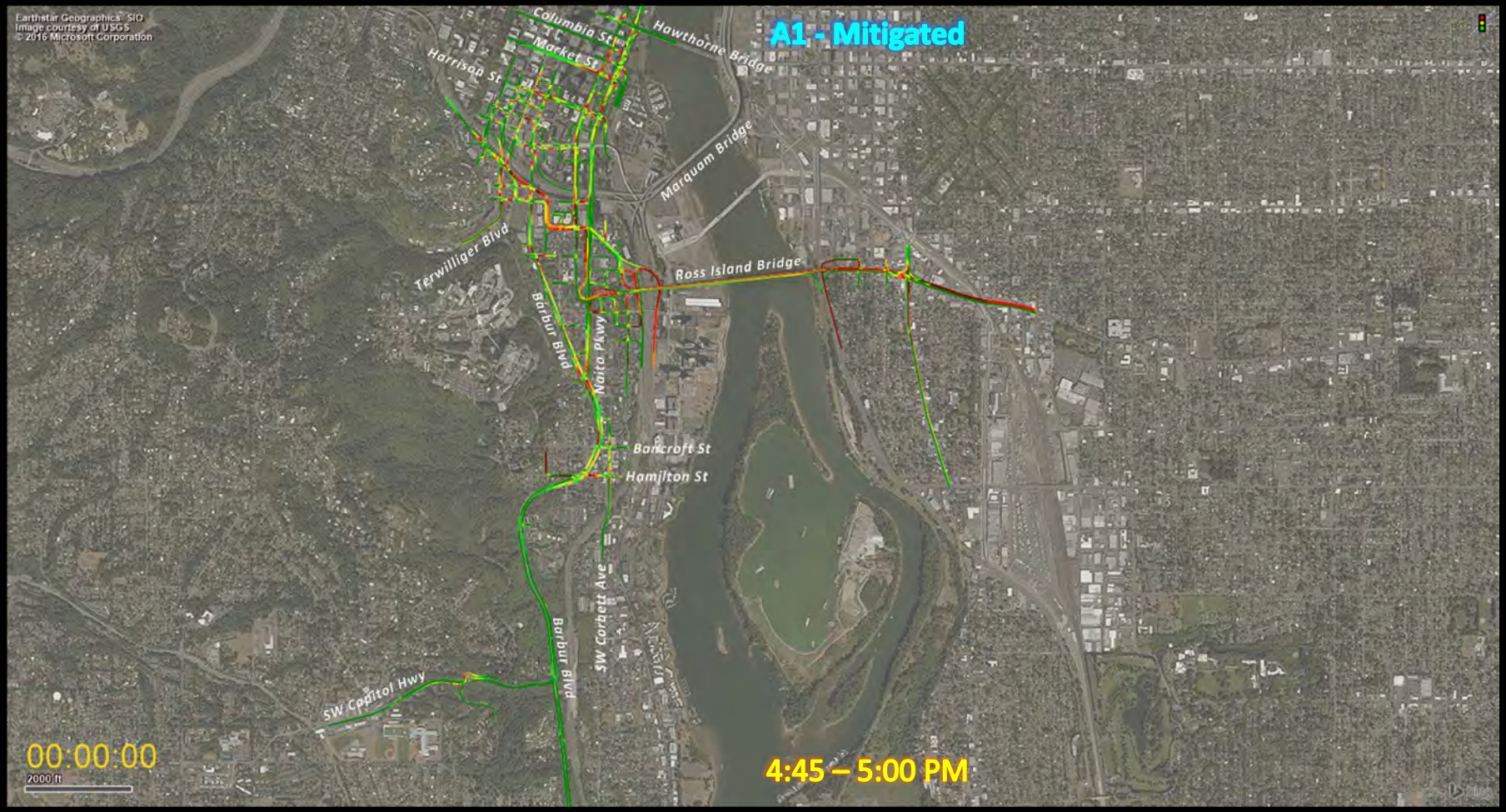
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Earthstar Geographics SIO
Image courtesy of USGS
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Columbia St
Market St
Harrison St
Hawthorne Bridge
Marquam Bridge
Terwilliger Blvd
Ross Island Bridge
Barbur Blvd
Naito Pkwy
Bancroft St
Hamilton St
SW Corbett Ave
Barbur Blvd
SW Capitol Hwy
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2000 ft
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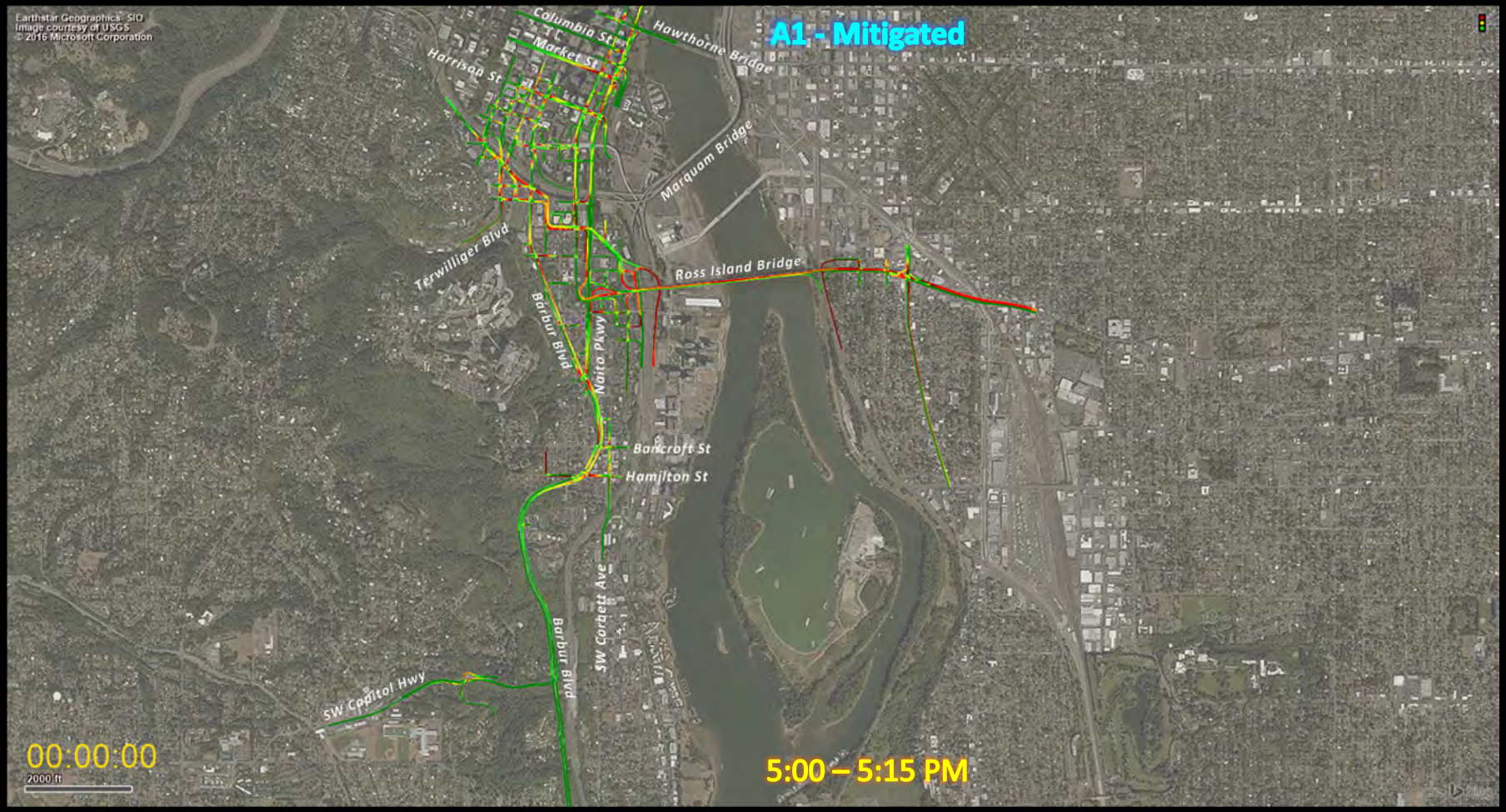
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Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
Columbia St
Market St
Harrison St
Hawthorne Bridge
Marquam Bridge
Terwilliger Blvd
Ross Island Bridge
Barbur Blvd
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Bancroft St
Hamilton St
SW Corbett Ave
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SW Capitol Hwy
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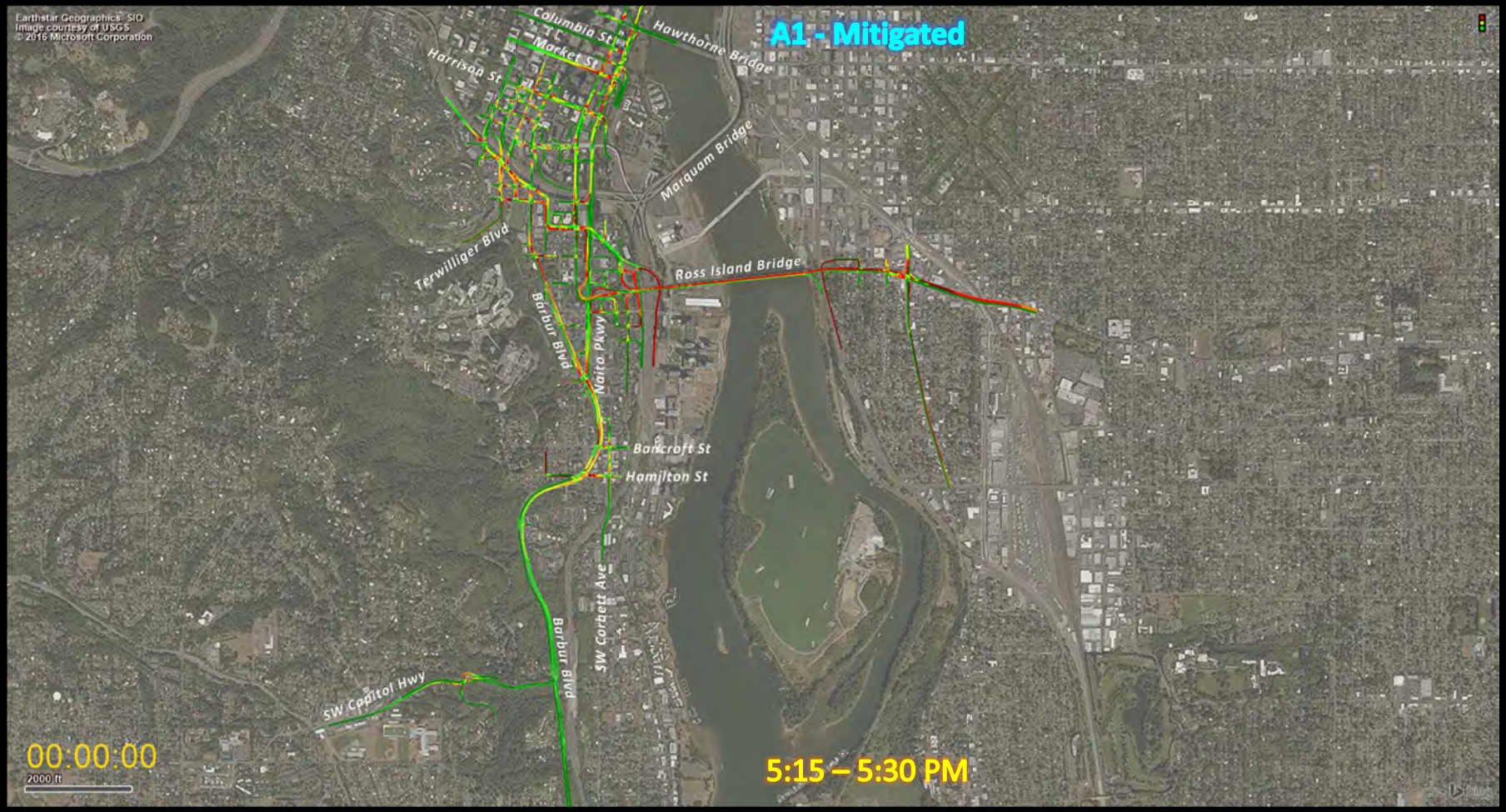
2000 ft
5:00 – 5:15 PM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Columbia St
Market St
Harrison St
Hawthorne Bridge
Marquam Bridge
Terwilliger Blvd
Ross Island Bridge
Barbur Blvd
Naito Pkwy
Bancroft St
Hamilton St
SW Corbett Ave
Barbur Blvd
SW Capitol Hwy
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2000 ft
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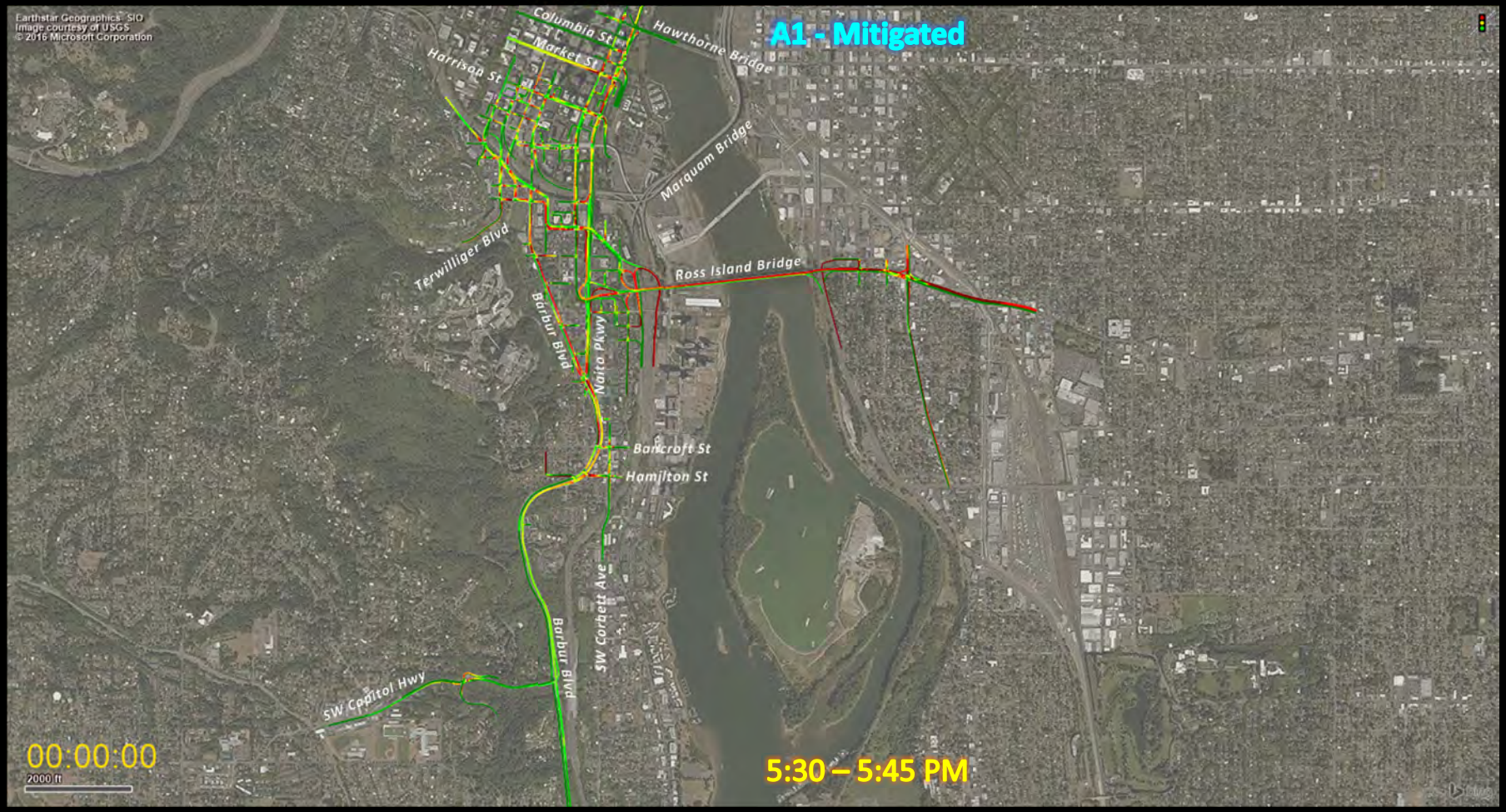
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Harrison St
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Ross Island Bridge
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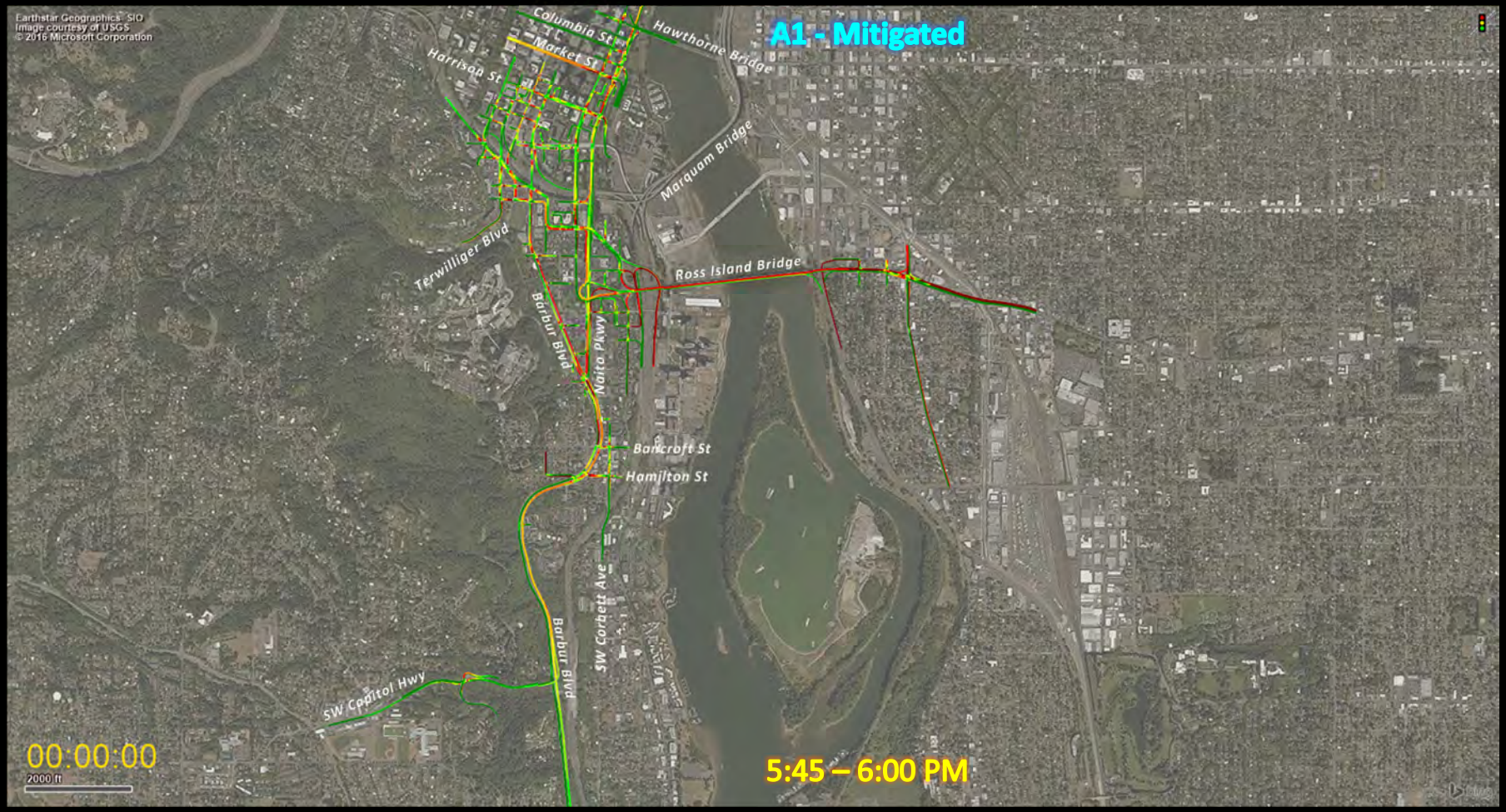
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Columbia St
Market St
Harrison St
Hawthorne Bridge
Marquam Bridge
Terwilliger Blvd
Ross Island Bridge
Barbur Blvd
Naito Pkwy
Bancroft St
Hamilton St
SW Corbett Ave
Barbur Blvd
SW Capitol Hwy
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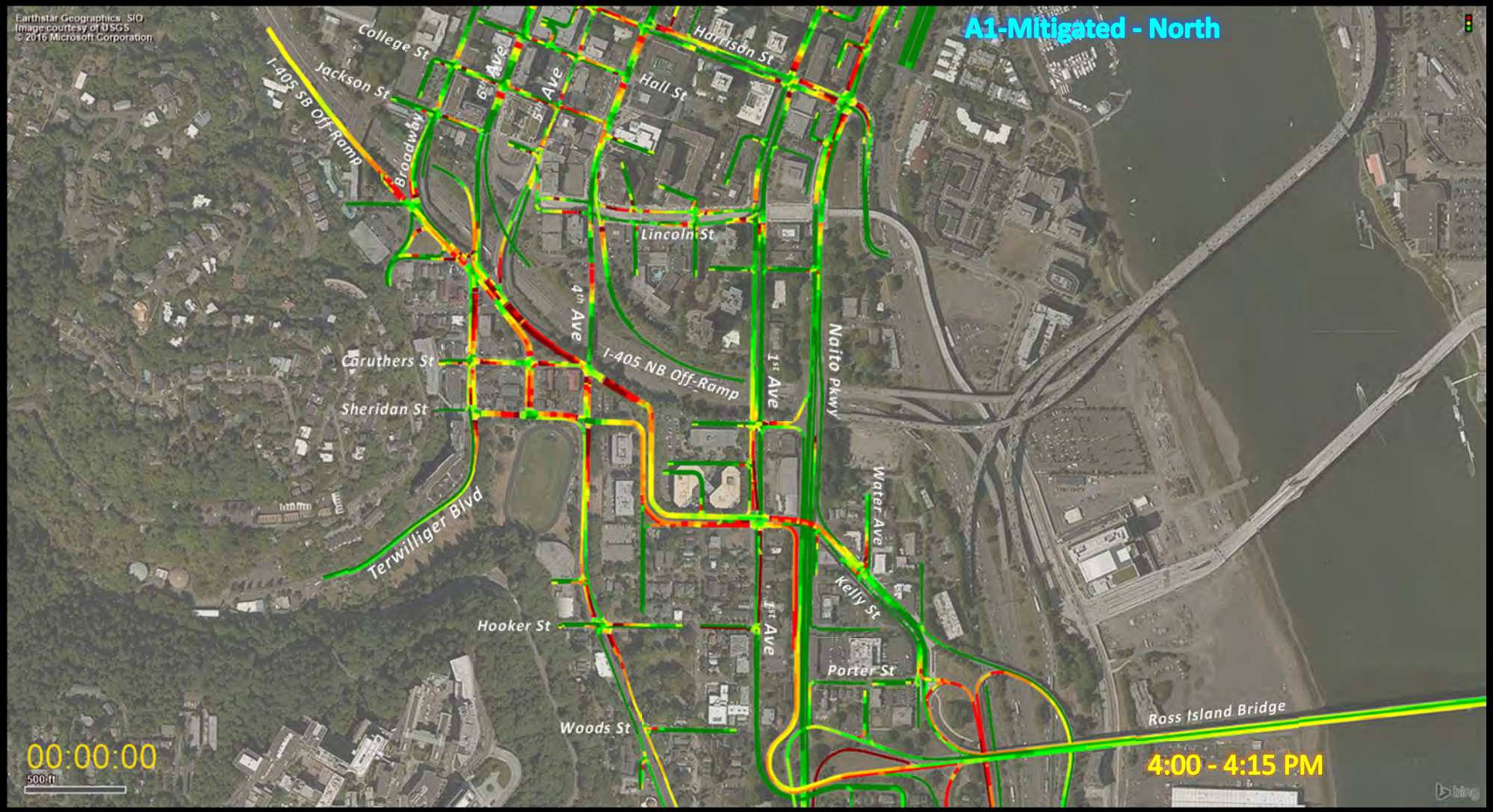
2000 ft
5:45 – 6:00 PM

Alternative A1 – Mitigated: North

Barbur Representative Alignment & Mitigations


A1-Mitigated - North
Earthstar Geographics, SIO
Image courtesy of USGS
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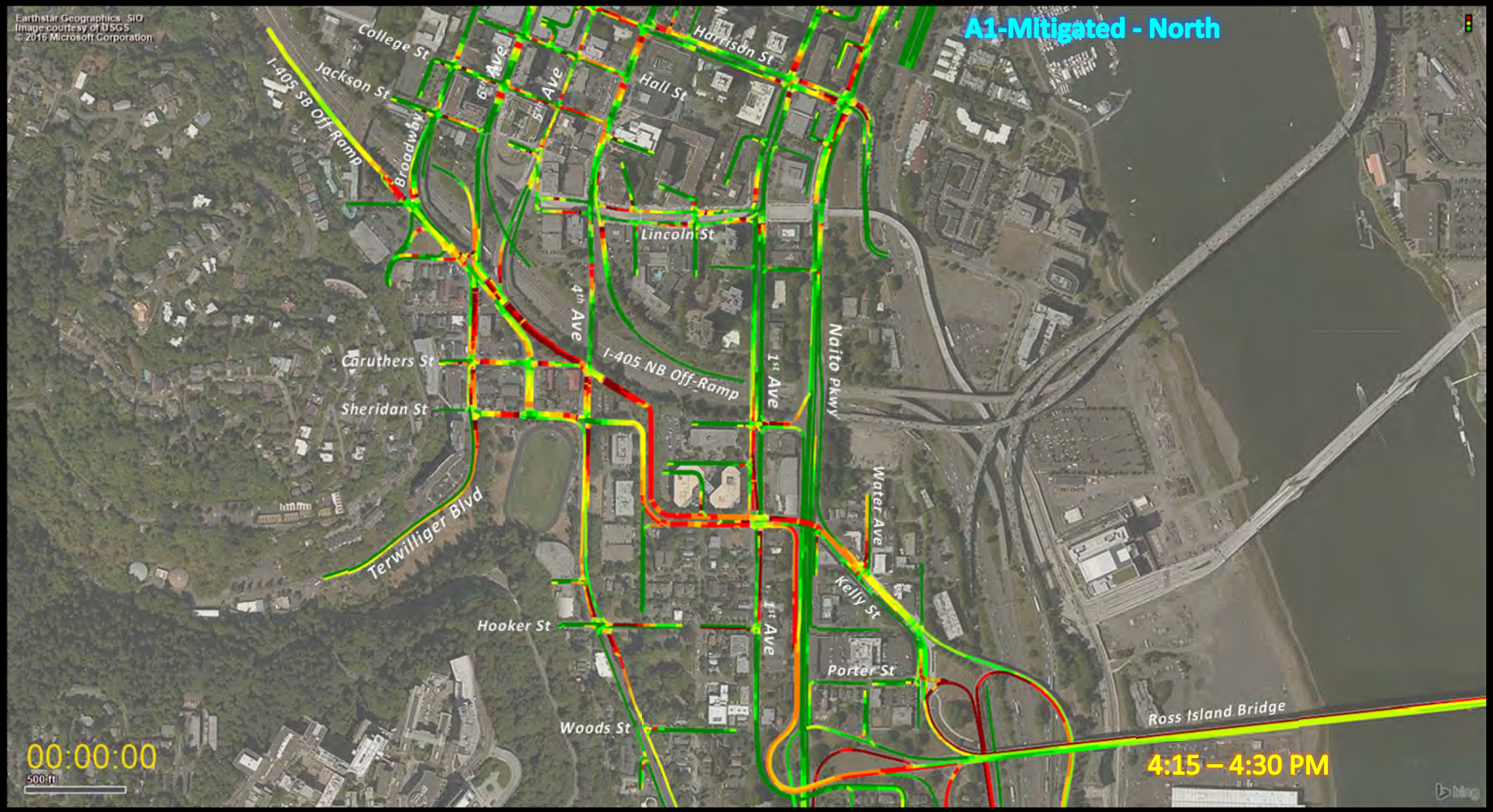
College St
Jackson St
I-405 SB Off-Ramp
Broadway
6th Ave
5th Ave
Hall St
Harrison St
Lincoln St
4th Ave
I-405 NB Off-Ramp
1st Ave
Naito Pkwy
Caruthers St
Sheridan St
Terwilliger Blvd
Water Ave
Kelly St
Hooker St
Porter St
Woods St
Ross Island Bridge
00:00:00
500 ft
4:00 - 4:15 PM
bing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Earthstar Geographics, SIO
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College St
Jackson St
I-405 SB Off-Ramp
Broadway
6th Ave
5th Ave
Harrison St
Hall St
Lincoln St
4th Ave
I-405 NB Off-Ramp
1st Ave
Naito Pkwy
Caruthers St
Sheridan St
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Kelly St
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Woods St
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500 ft
4:15 – 4:30 PM
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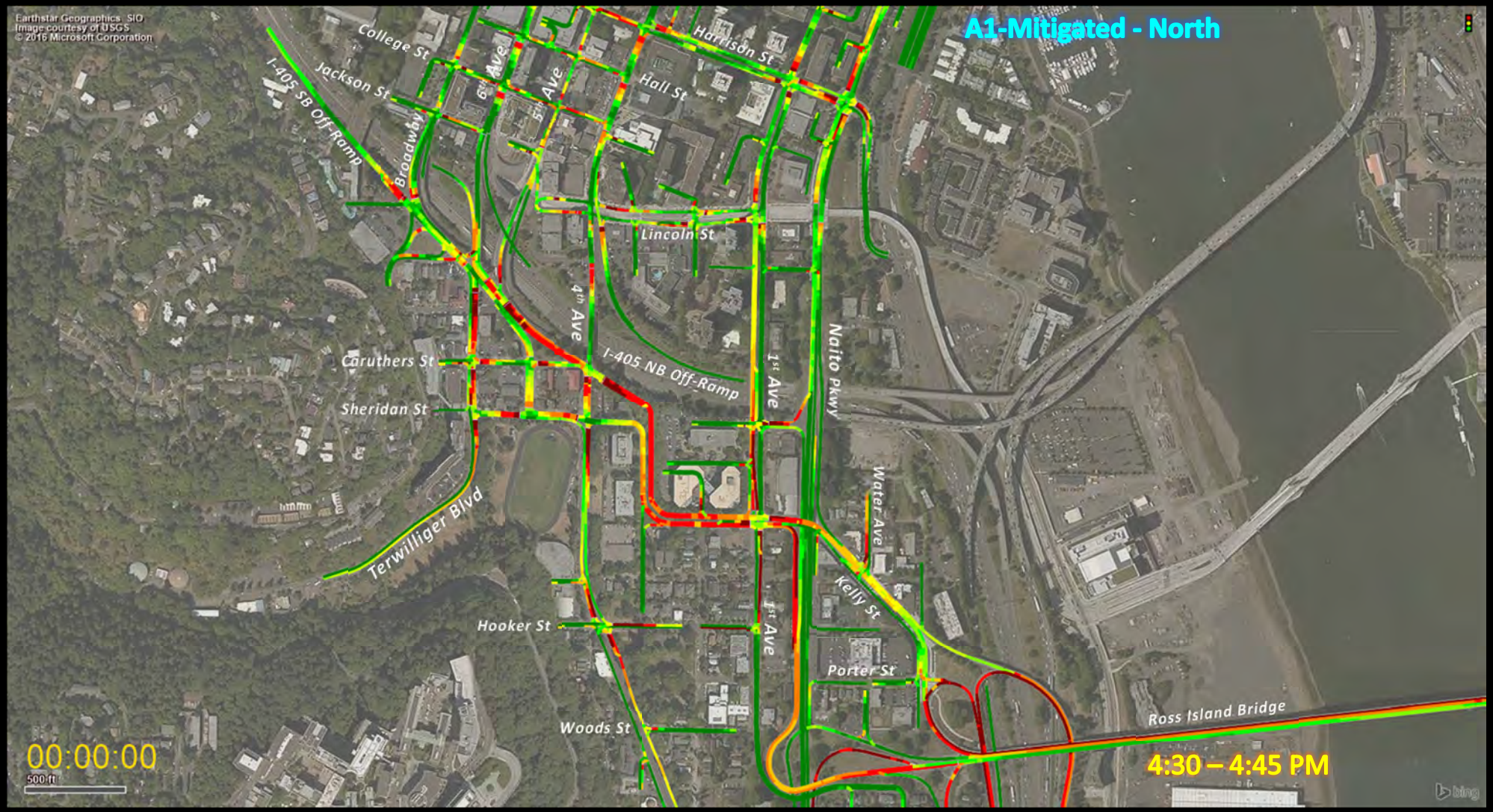
A1-Mitigated - North
Earthstar Geographics, SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
College St
Jackson St
I-405 SB Off-Ramp
Broadway
6th Ave
5th Ave
Hall St
Harrison St
Lincoln St
4th Ave
I-405 NB Off-Ramp
1st Ave
Naito Pkwy
Caruthers St
Sheridan St
Terwilliger Blvd
Water Ave
Kelly St
Hooker St
Porter St
Woods St
Ross Island Bridge
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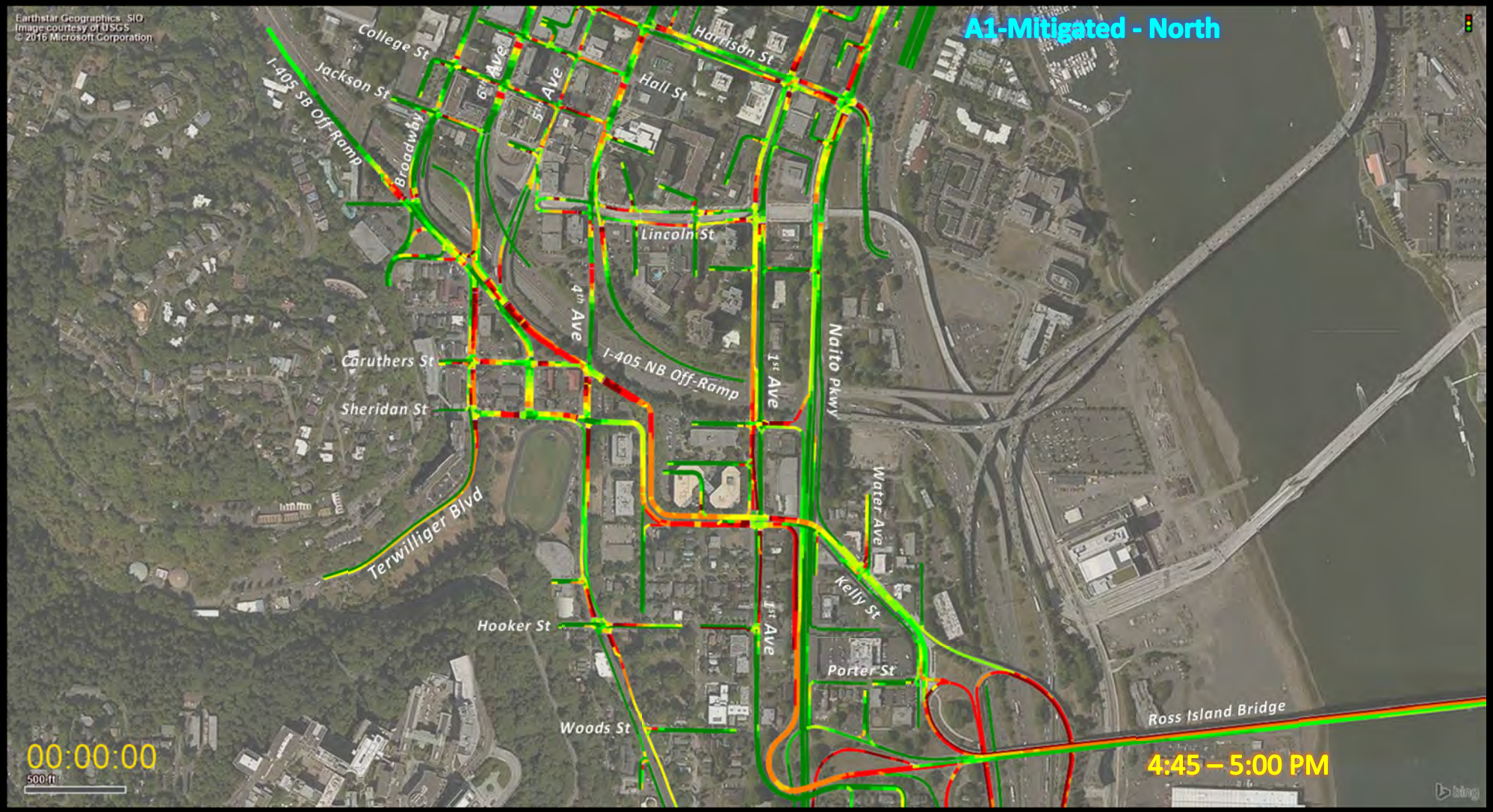
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Harrison St
Hall St
Lincoln St
4th Ave
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Caruthers St
Sheridan St
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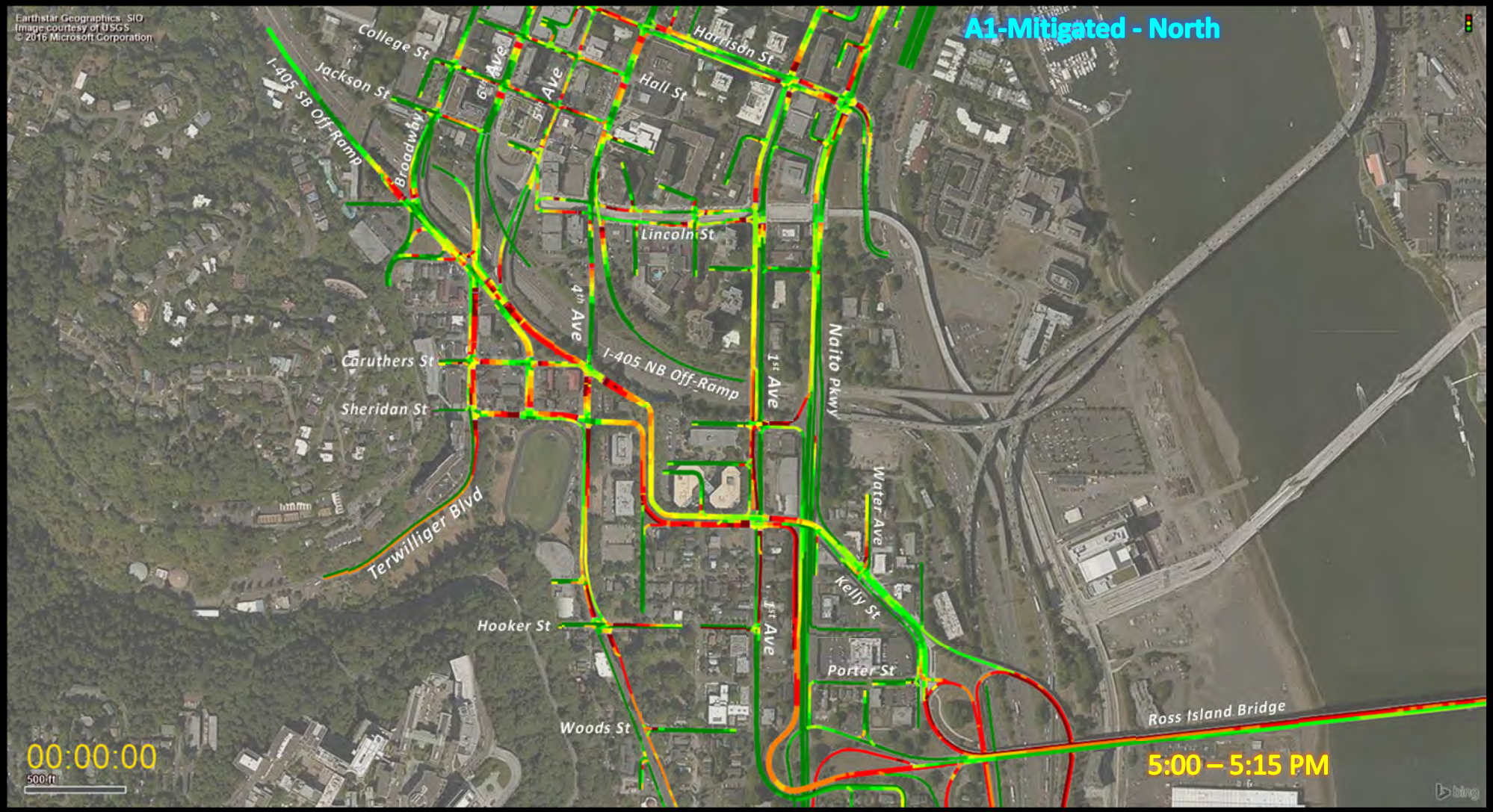
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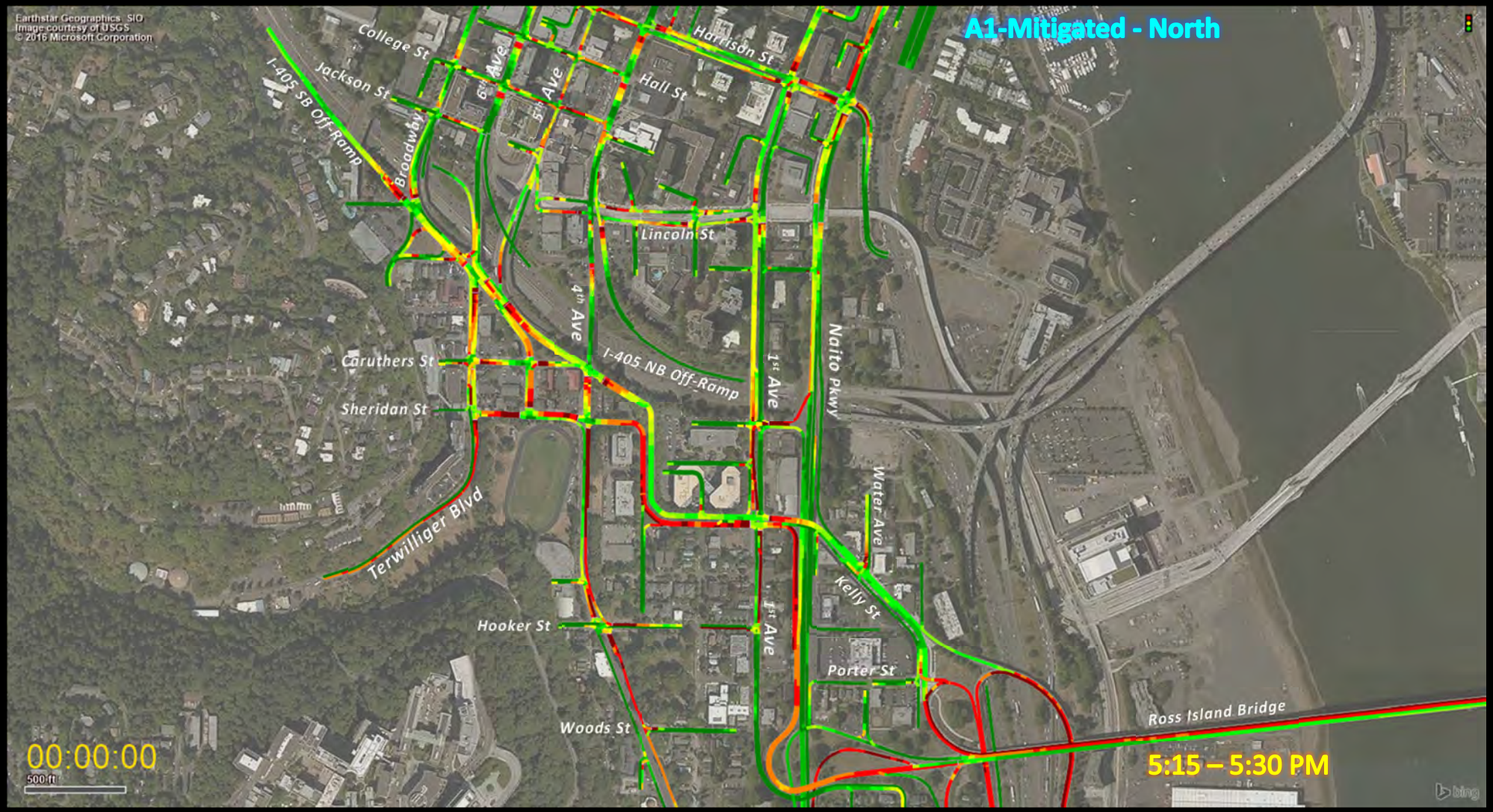
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Caruthers St
Sheridan St
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Woods St
Ross Island Bridge
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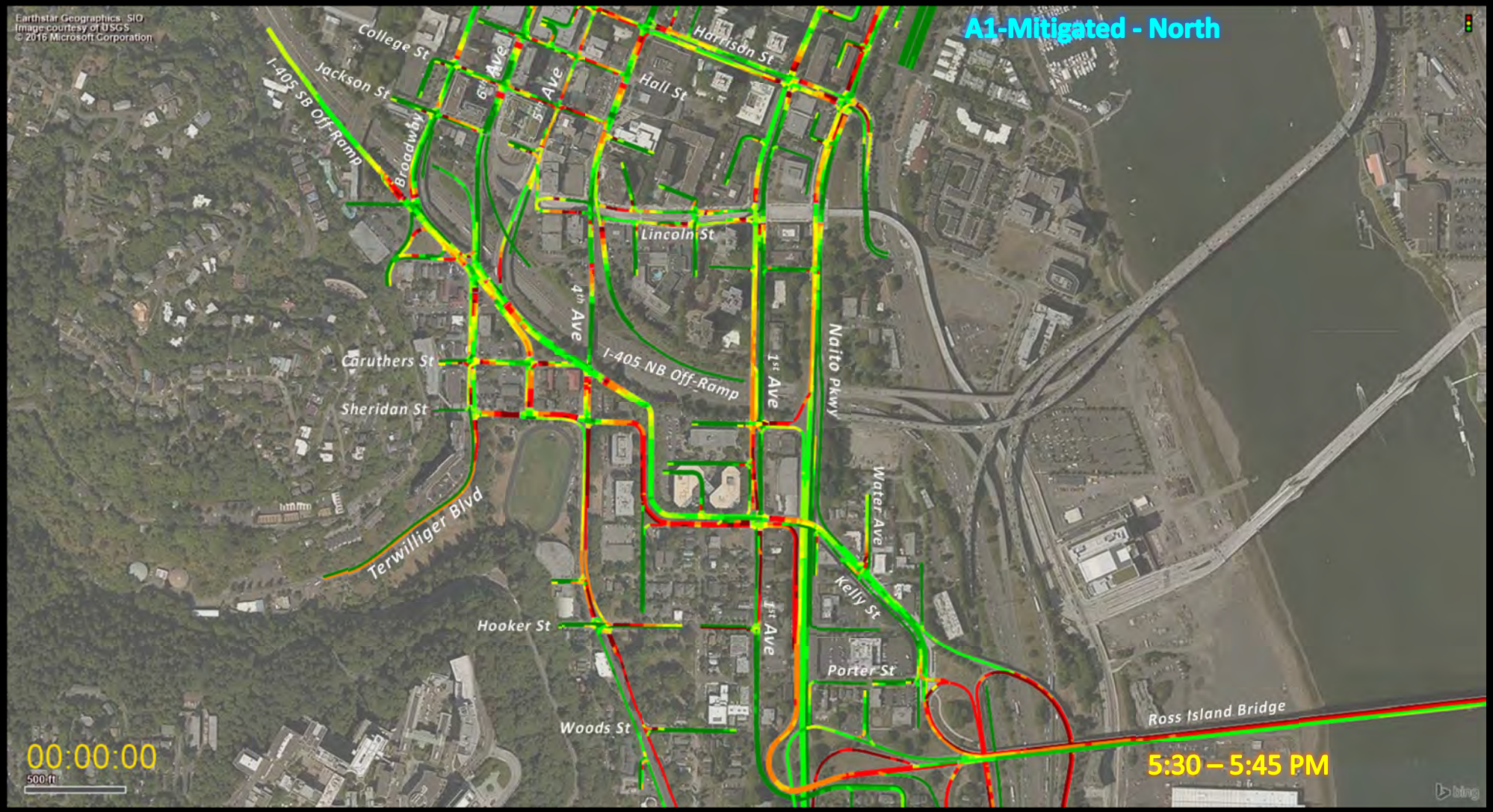
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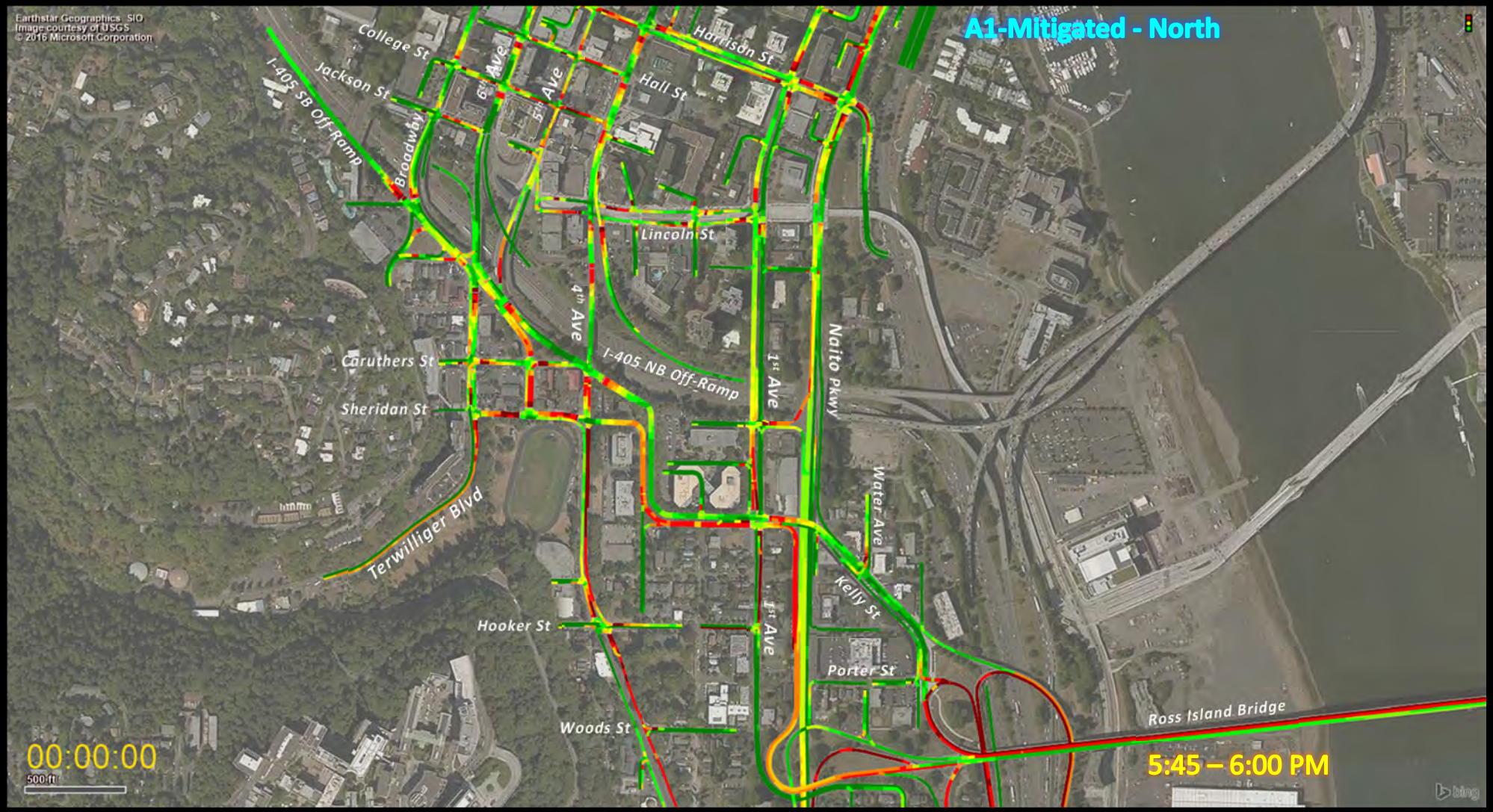
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Kelly St
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Porter St
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Ross Island Bridge
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500 ft
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bing

Alternative A1 – Mitigated: South

Barbur Representative Alignment & Mitigations

A1-Mitigated - South
Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
Whitaker St
1st Ave
Porter St
Ross Island Bridge
Powell Blvd
Gibbs St
Whitaker St
Curry St
Naito Pkwy
Kelly Ave
Hood Ave
Macadam Ave
Hwy 99E NB Off-Ramp
8th Ave
10th Ave
Milwaukie Ave
Lowell St
Bancroft St
Hamilton St
Barbur Blvd
Corbett Ave
00:00:00
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4:00 – 4:15 PM

A1-Mitigated - South
Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
Whitaker St
1st Ave
Porter St
Ross Island Bridge
Powell Blvd
Gibbs St
Whitaker St
Curry St
Naito Pkwy
Kelly Ave
Hood Ave
Macadam Ave
Hwy 99E NB Off-Ramp
8th Ave
10th Ave
Milwaukie Ave
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Hamilton St
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A1-Mitigated - South
Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
Whitaker St
1st Ave
Porter St
Ross Island Bridge
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Gibbs St
Whitaker St
Curry St
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Kelly Ave
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Macadam Ave
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A1-Mitigated - South
Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
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Porter St
Ross Island Bridge
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Gibbs St
Whitaker St
Curry St
Naito Pkwy
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Macadam Ave
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A1-Mitigated - South
Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
Whitaker St
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Ross Island Bridge
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Gibbs St
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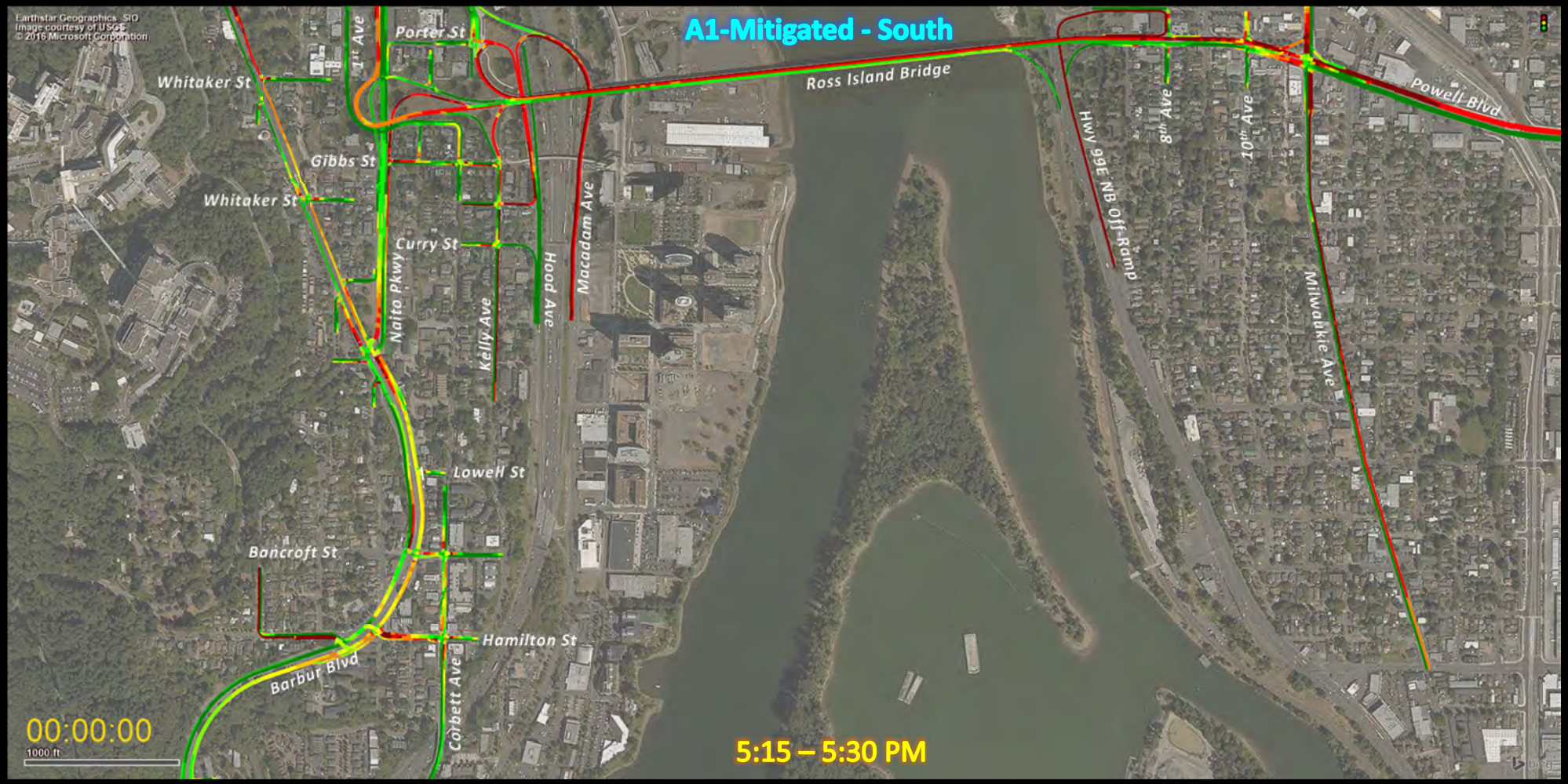
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Curry St
Naito Pkwy
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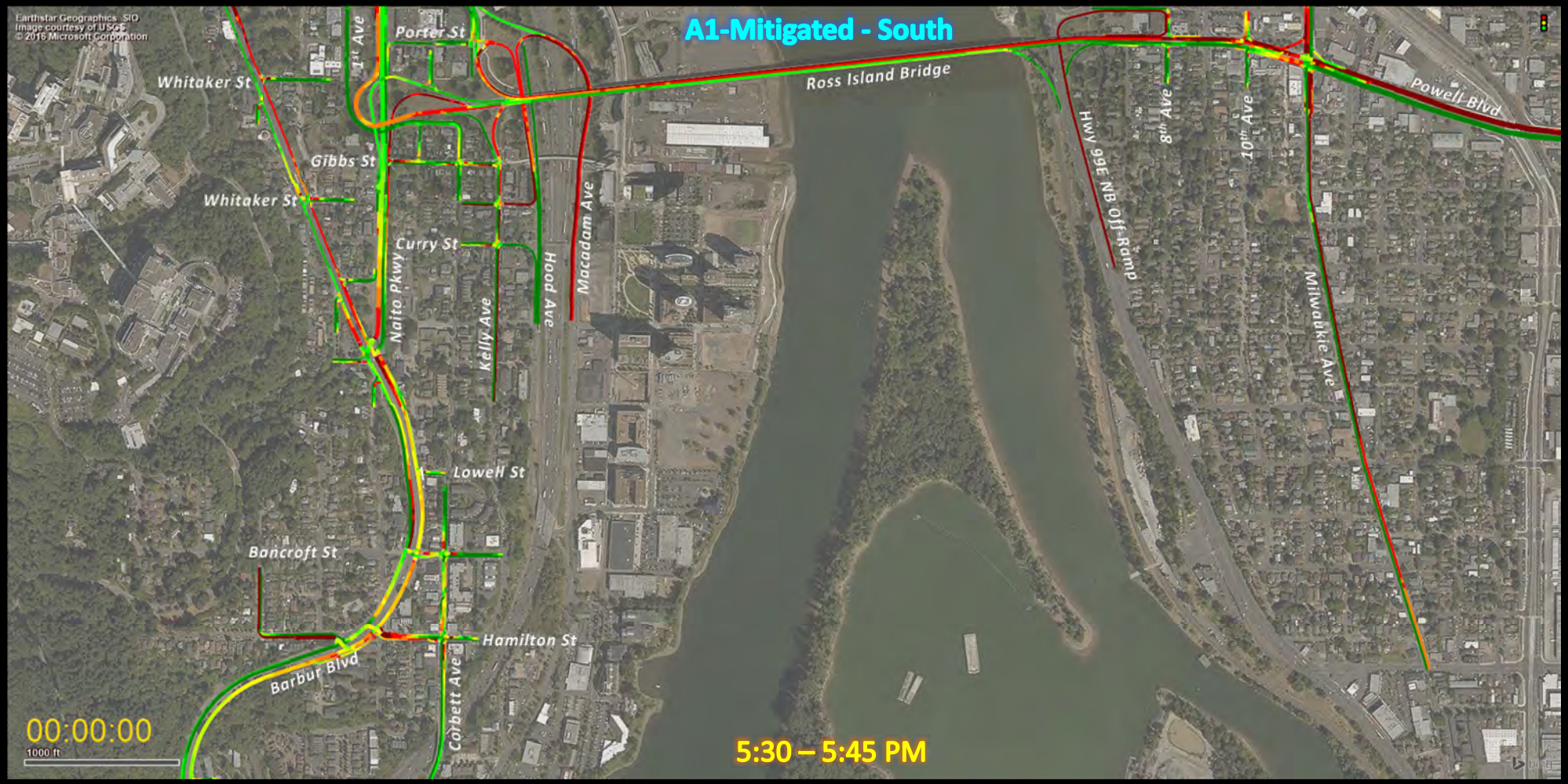
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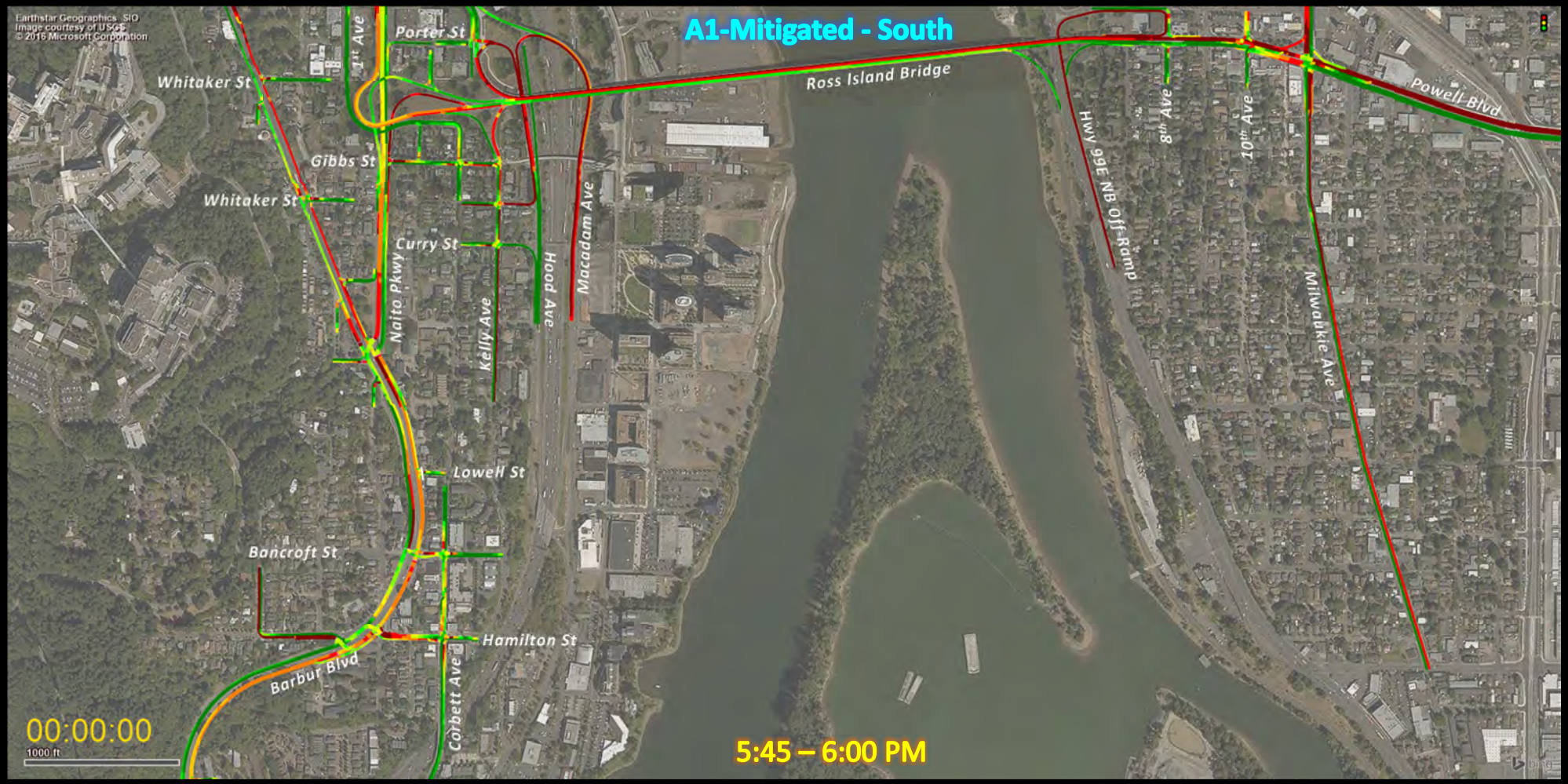
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Earthstar Geographics SIO
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Appendix FF

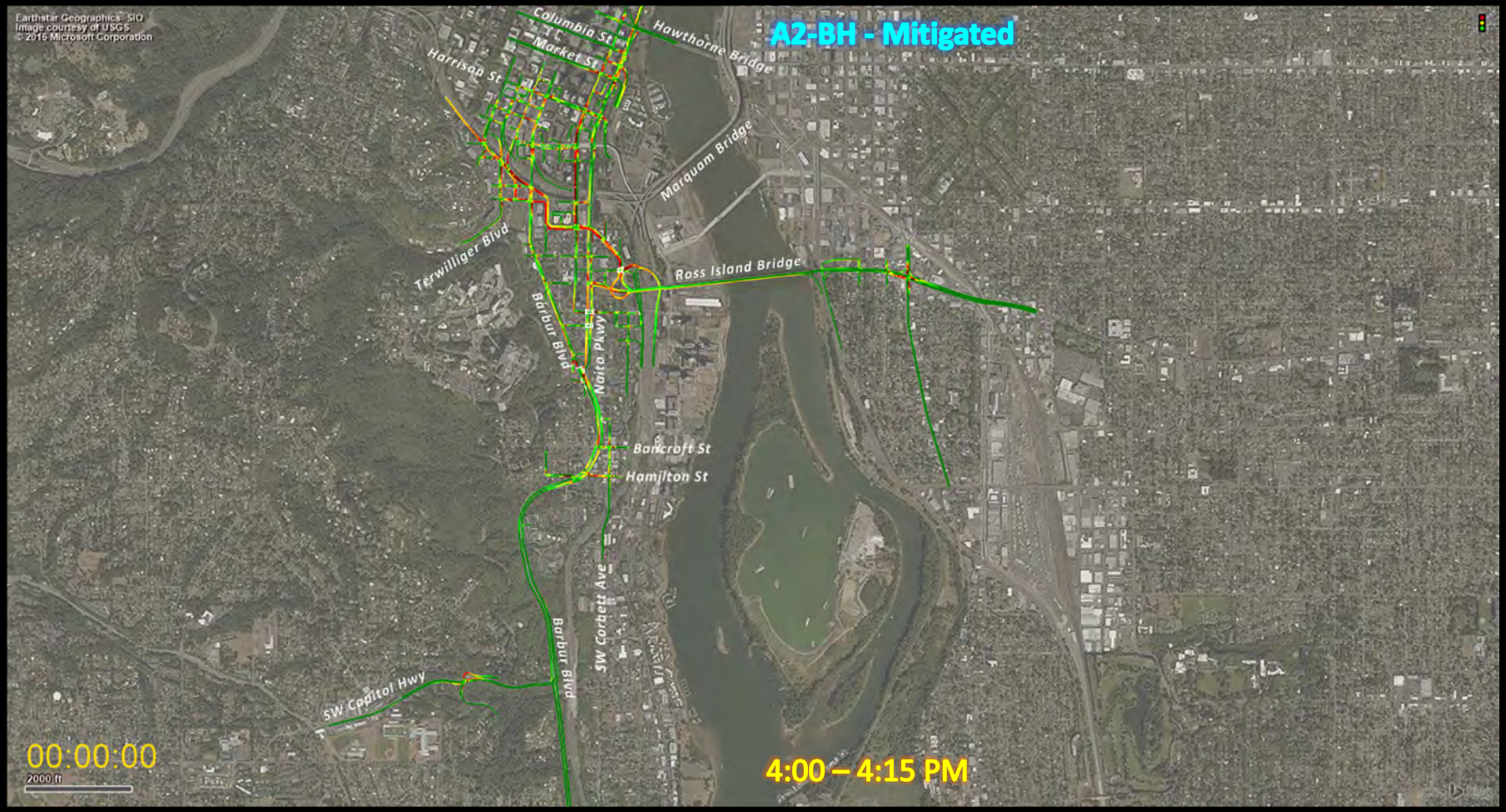
Mitigated Alternative A2-BH Vissim Model Queue Plots

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Alternative A2-BH – Mitigated: Full Study Area

Naito Alignment + Bridgehead & Mitigations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Columbia St
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Ross Island Bridge
Barbur Blvd
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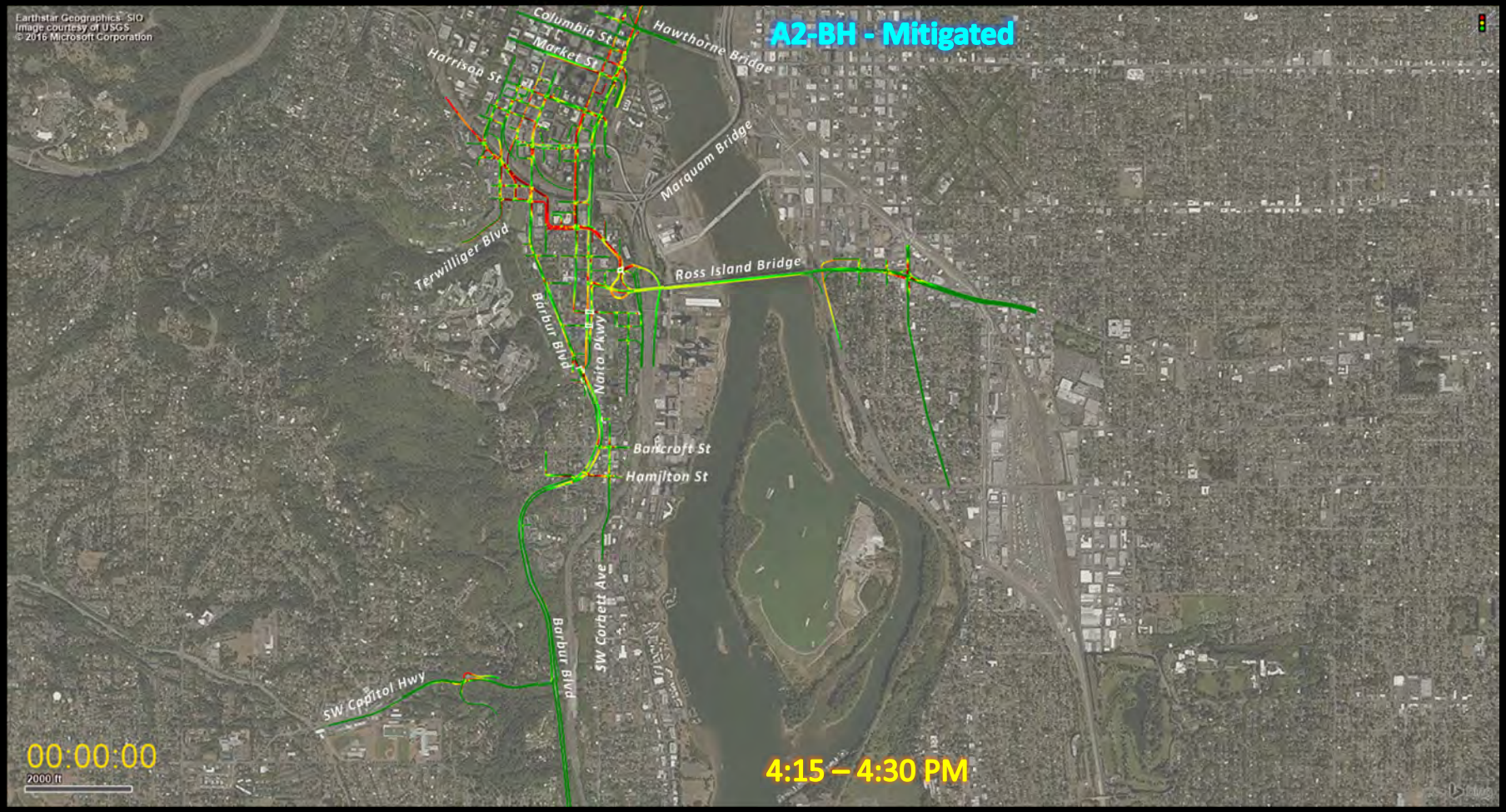
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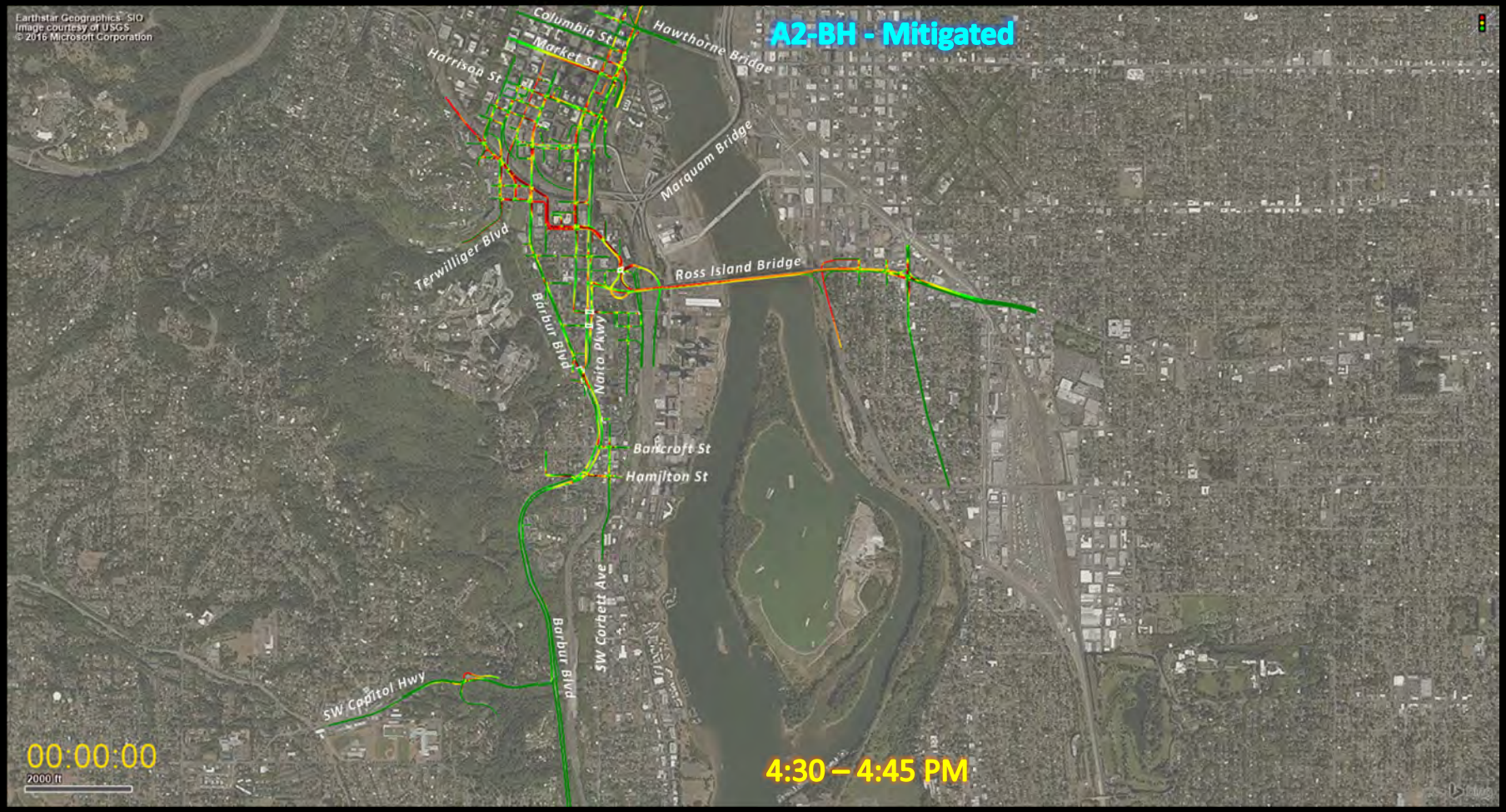
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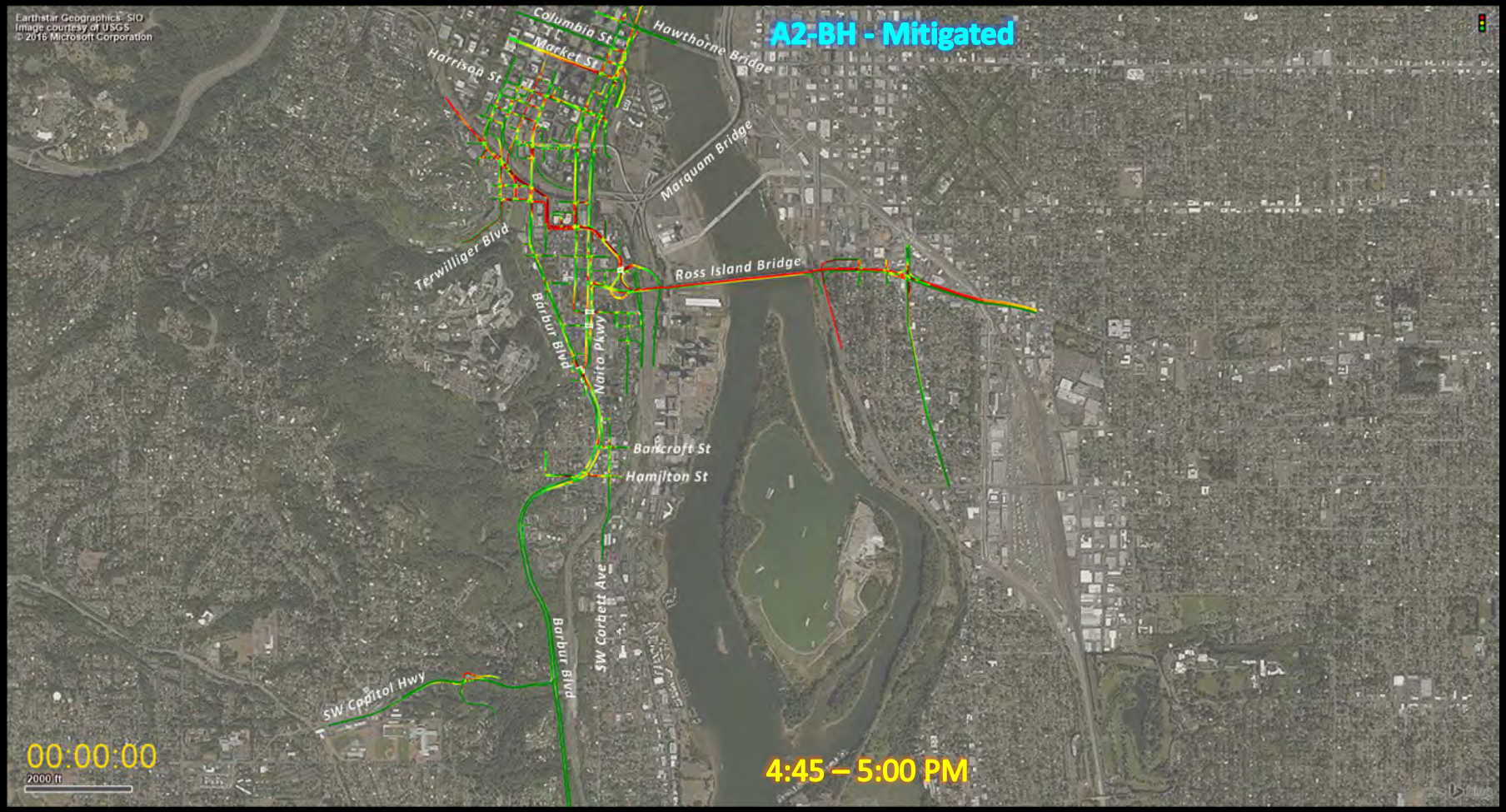
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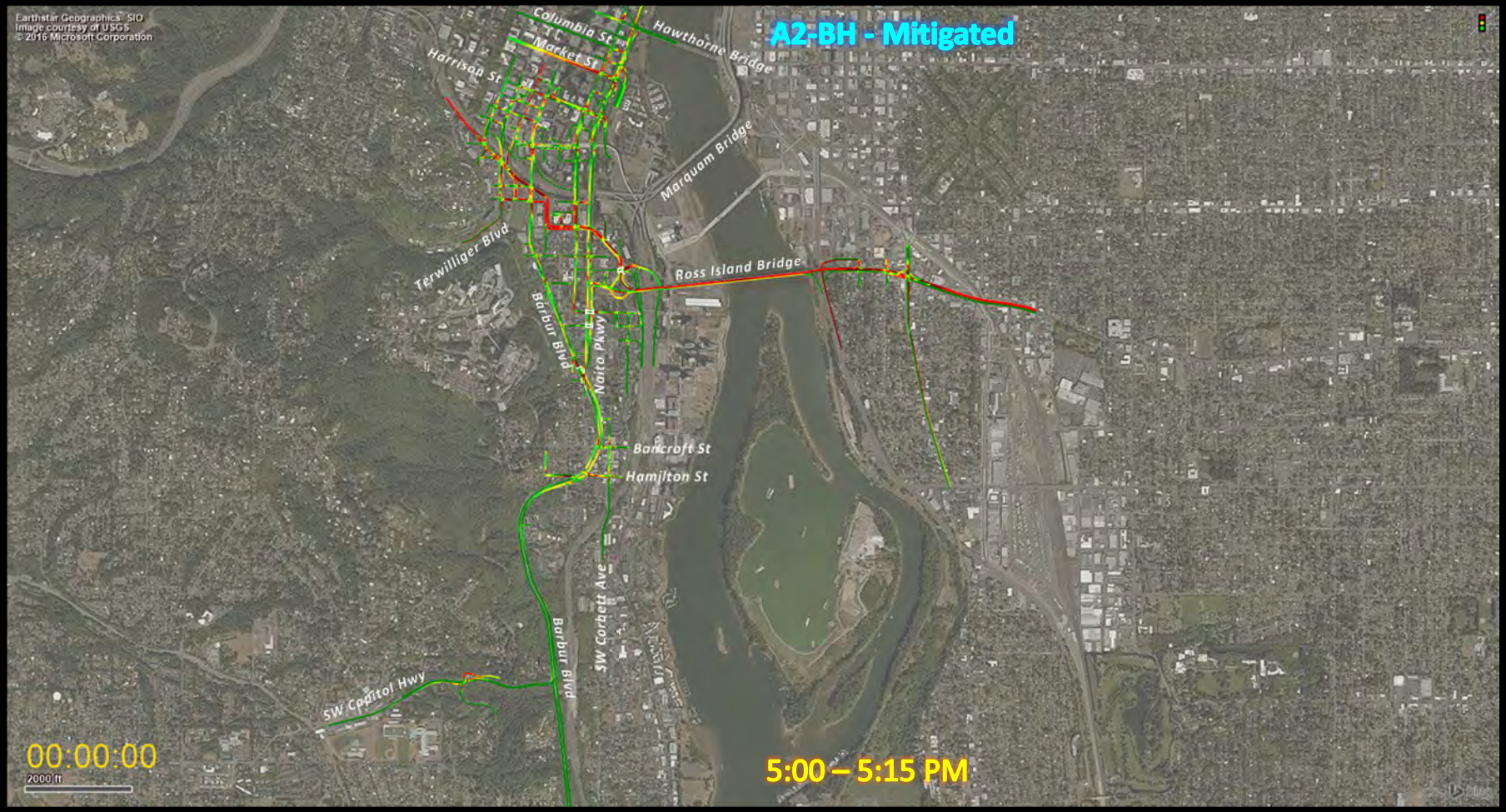
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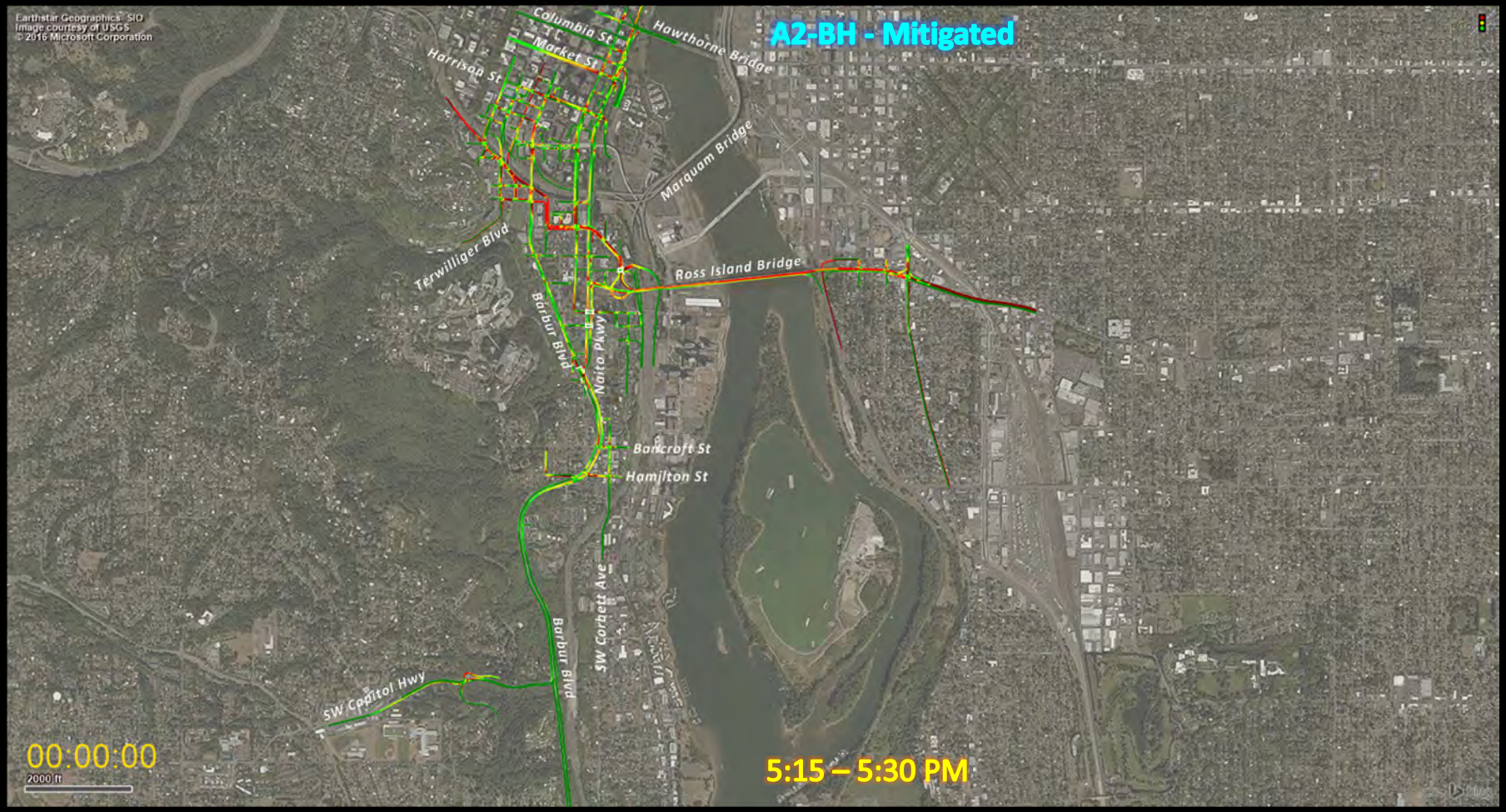
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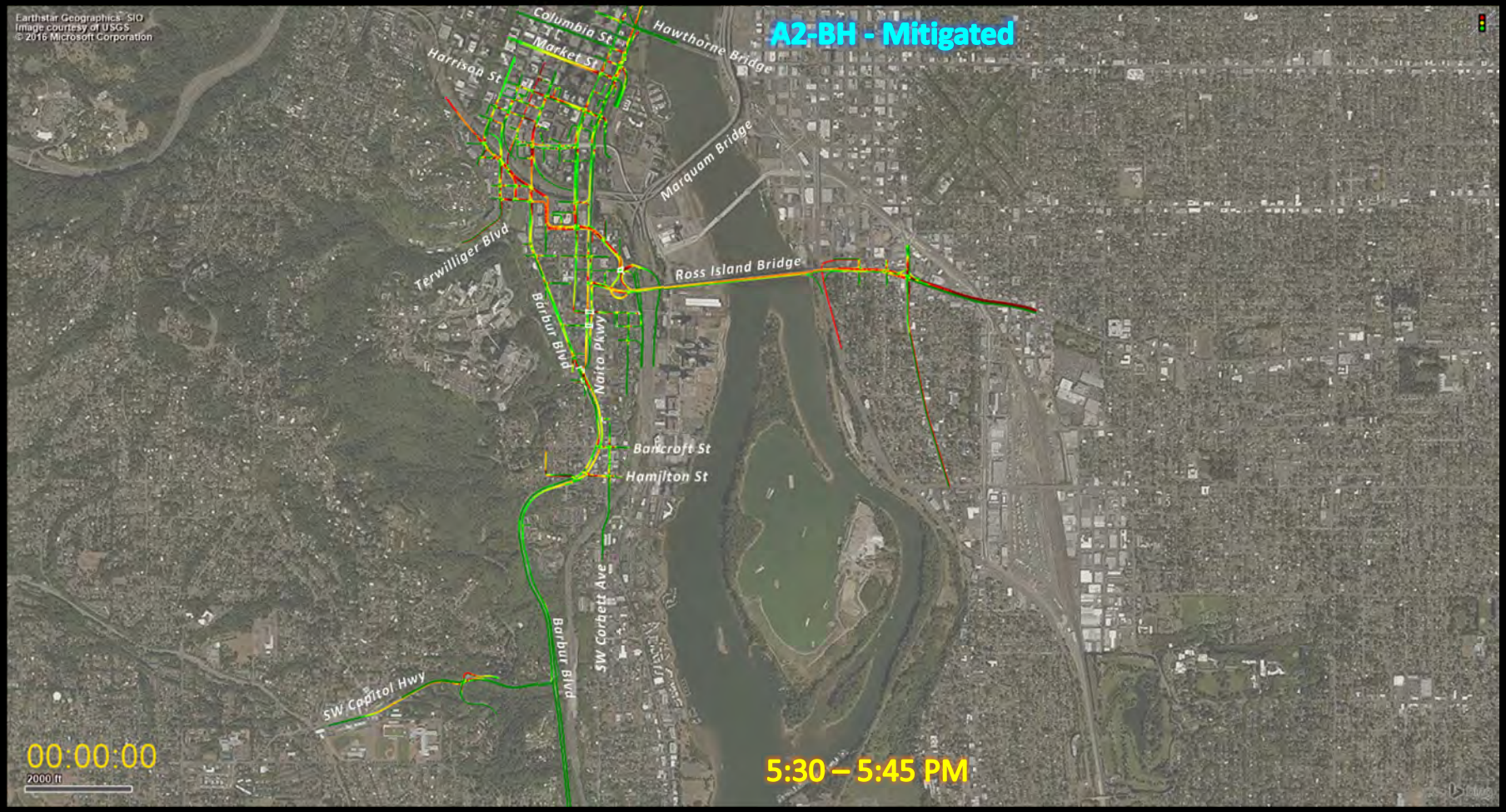
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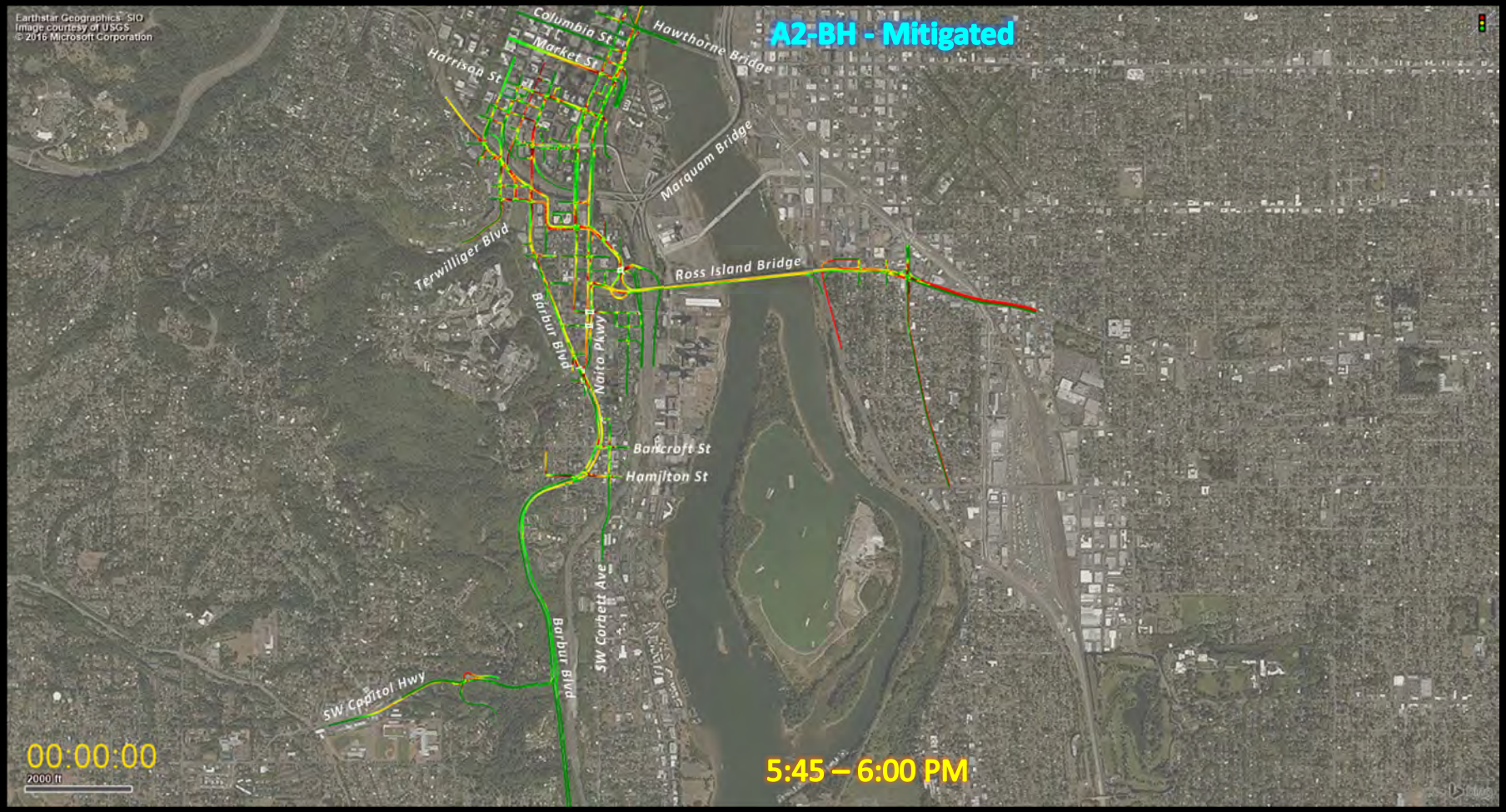
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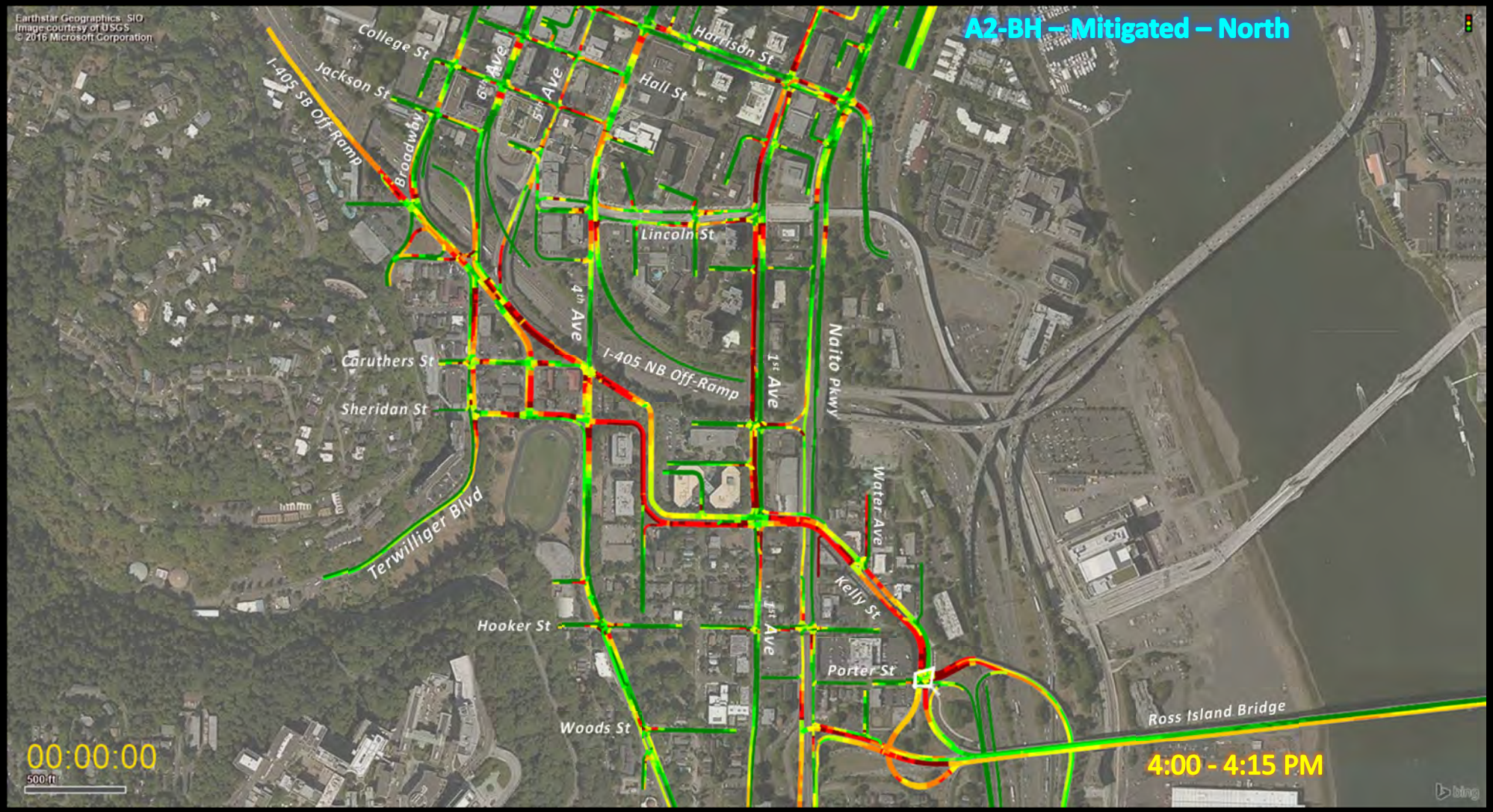
Alternative A2-BH – Mitigated: North

Naito Alignment + Bridgehead & Mitigations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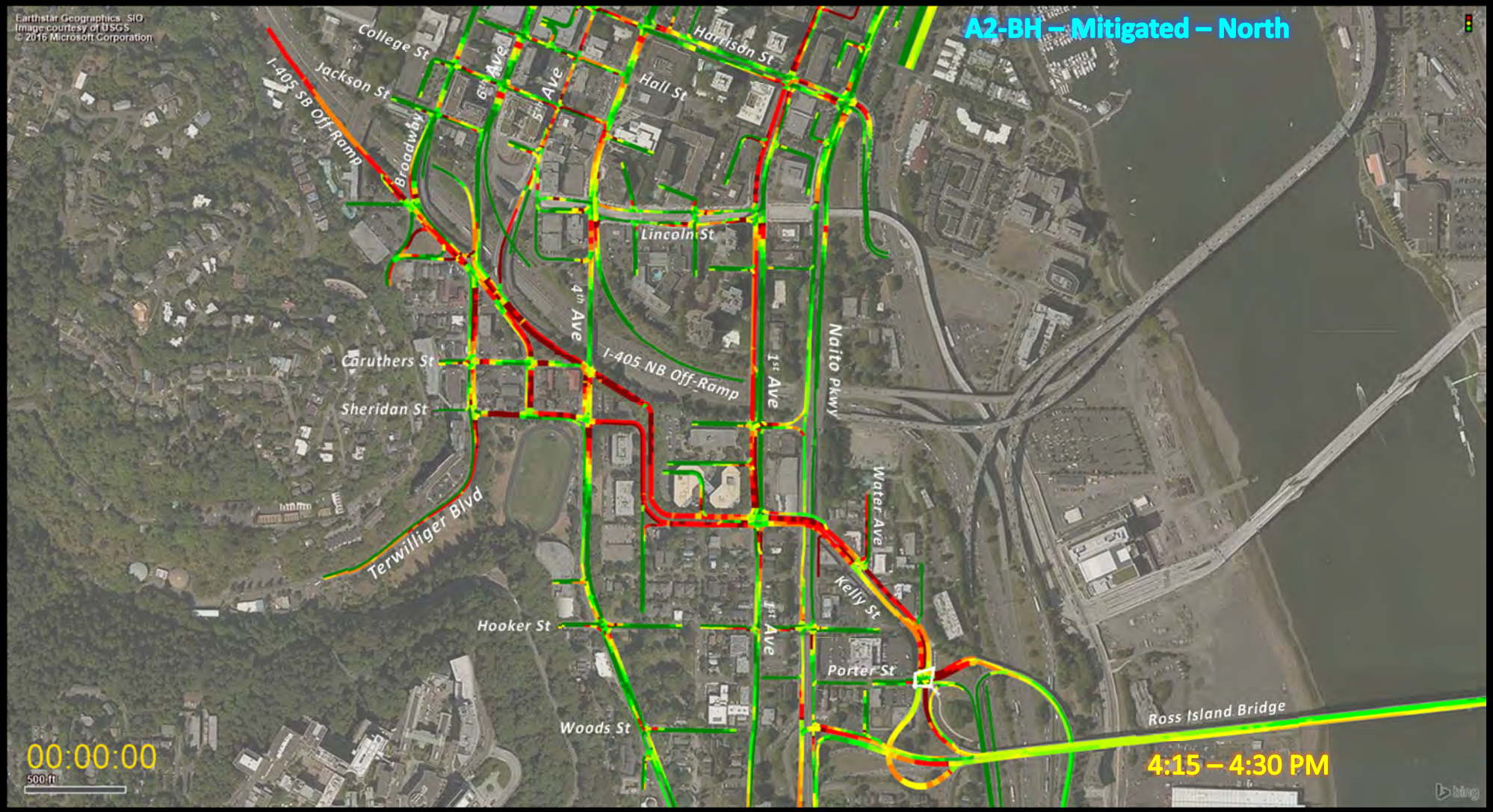
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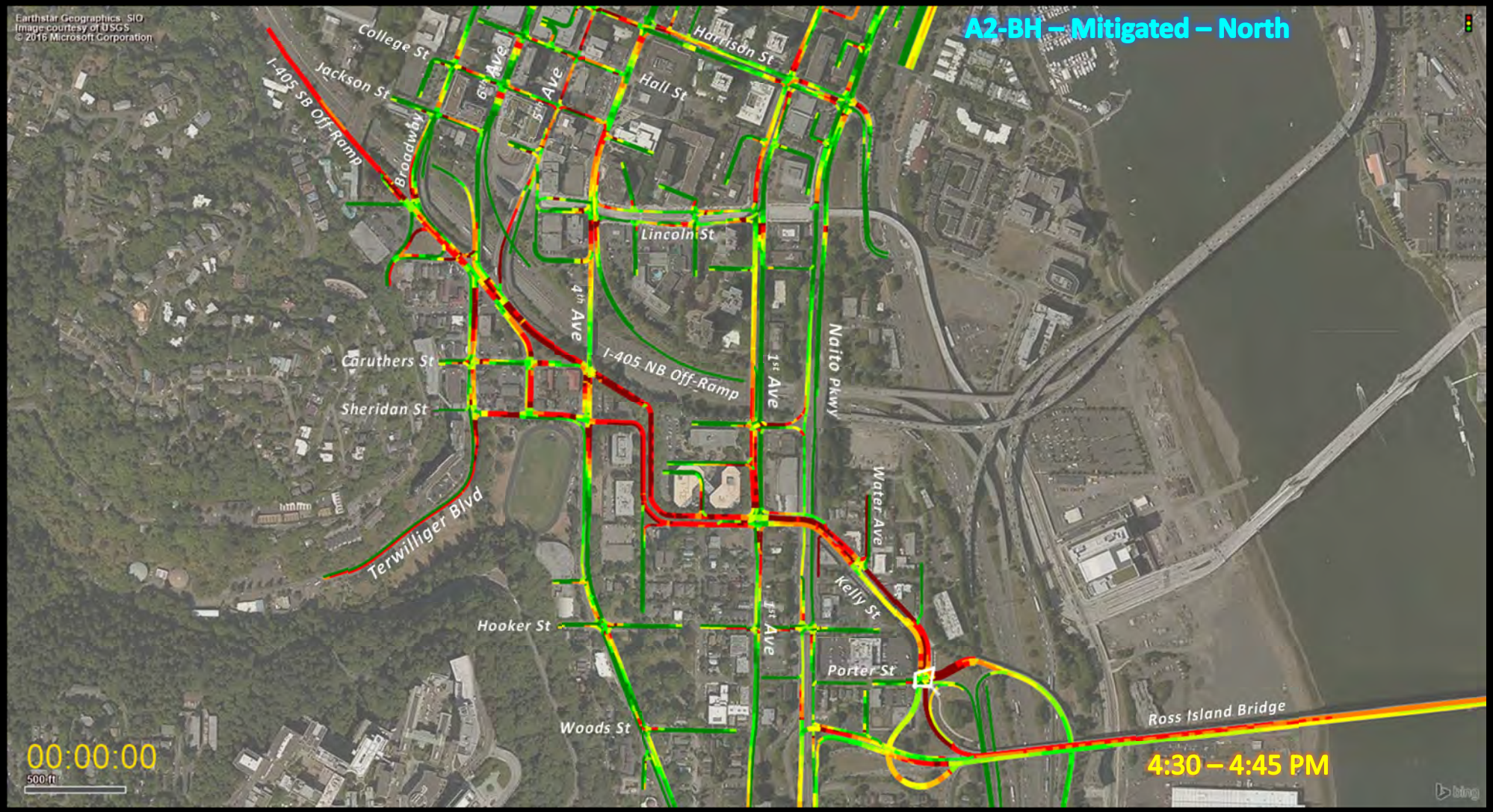
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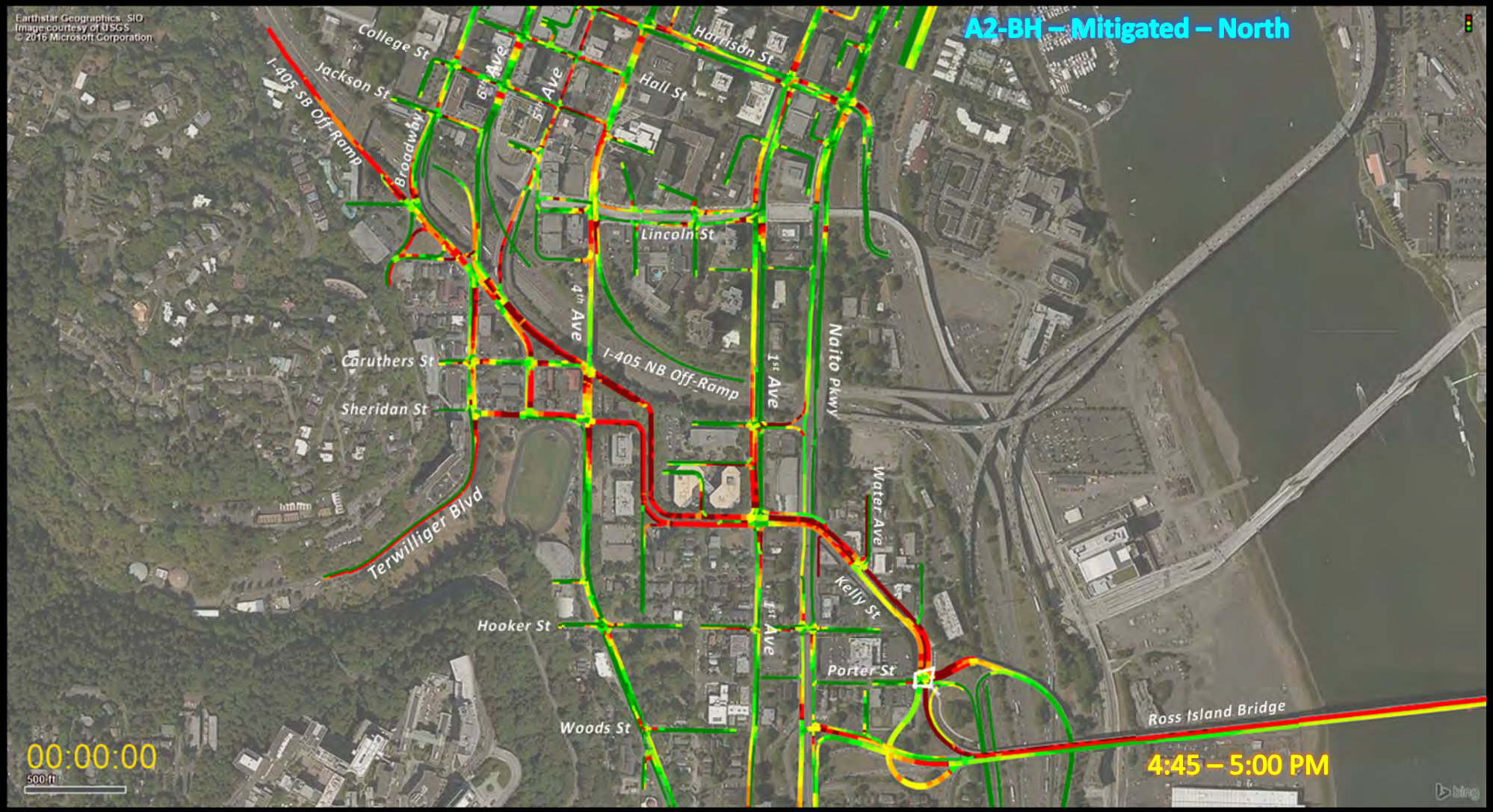
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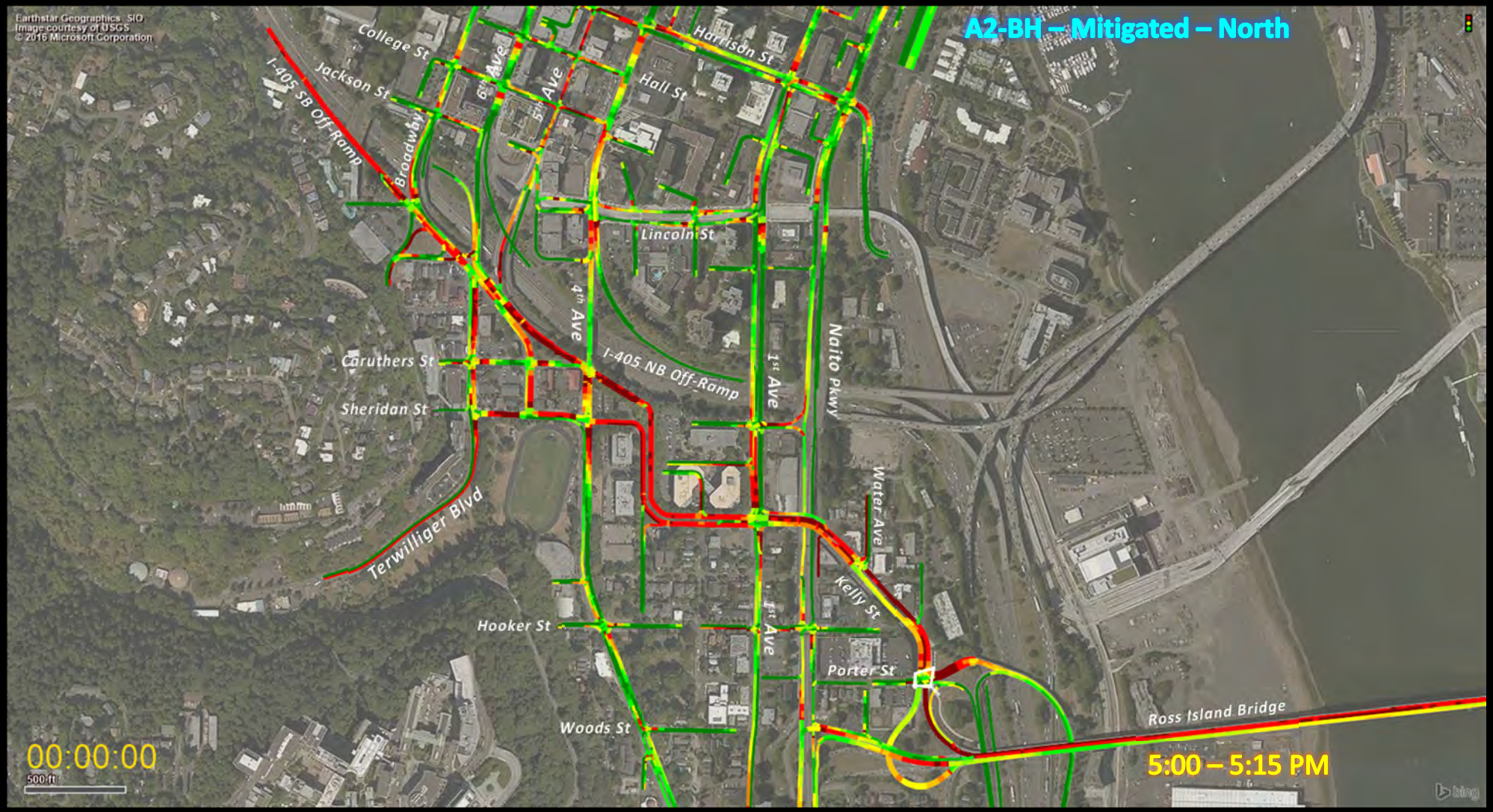
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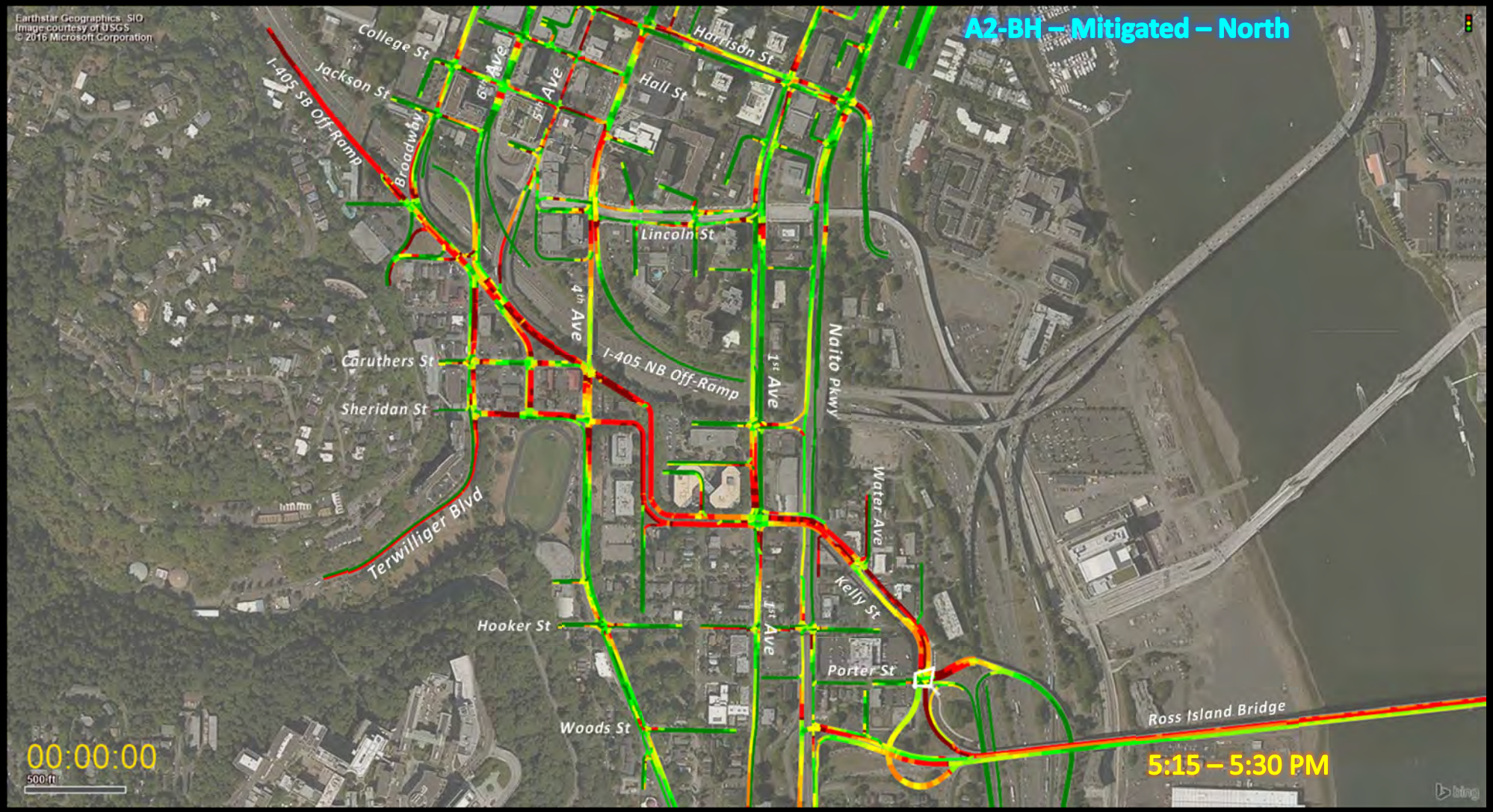
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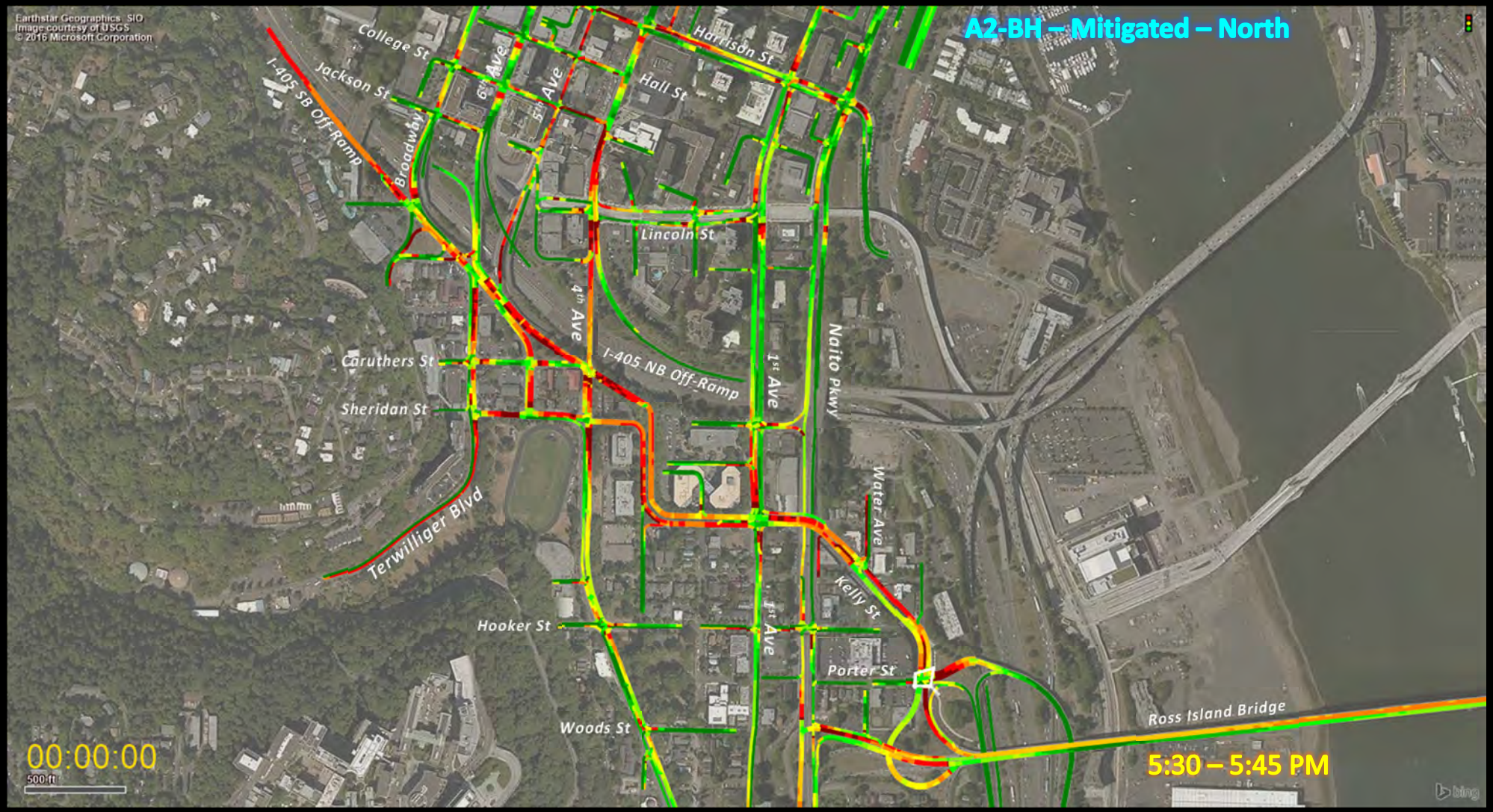
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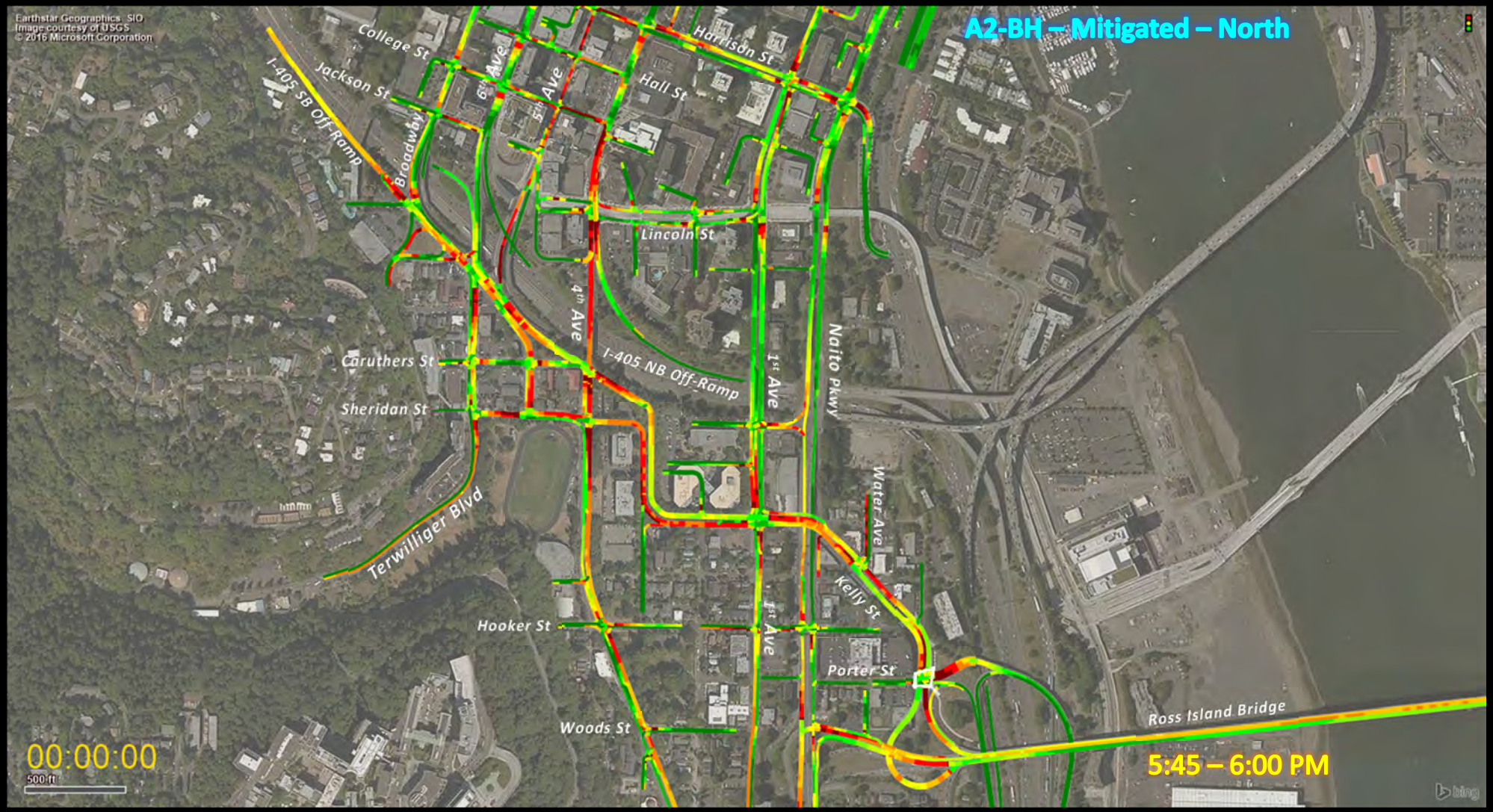
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Alternative A2-BH – Mitigated: South

Naito Alignment + Bridgehead & Mitigations

A2-BH – Mitigated – North
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Whitaker St
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A2-BH – Mitigated – South
Earthstar Geographics SIO
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Earthstar Geographics SIO
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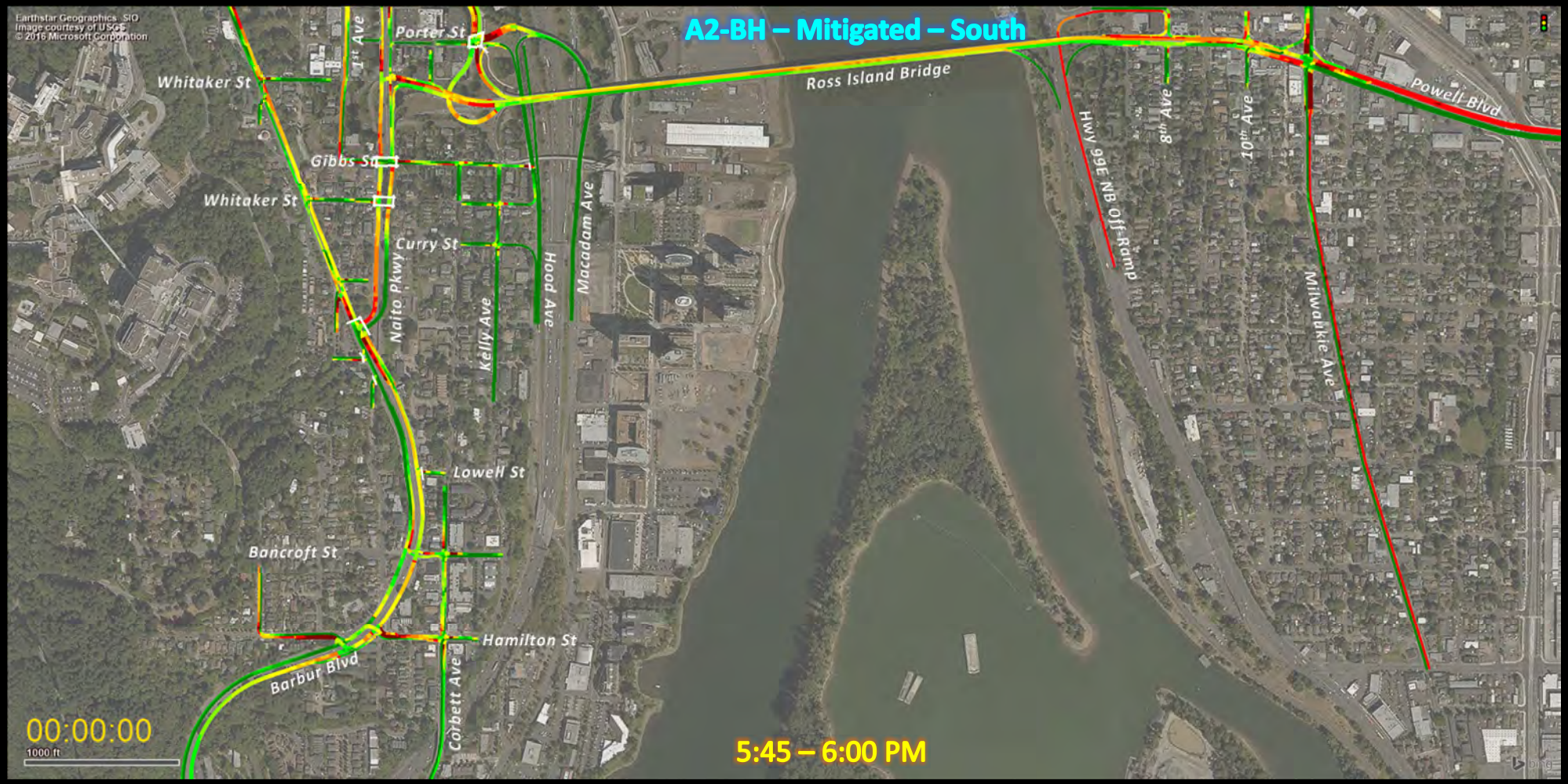
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Appendix GG

Mitigated Alternative A2-LA Vissim Model Queue Plots

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Alternative A2-LA – Mitigated: Full Study Area

Naito Alignment + Limited Access & Mitigations

A2-LA - Mitigated
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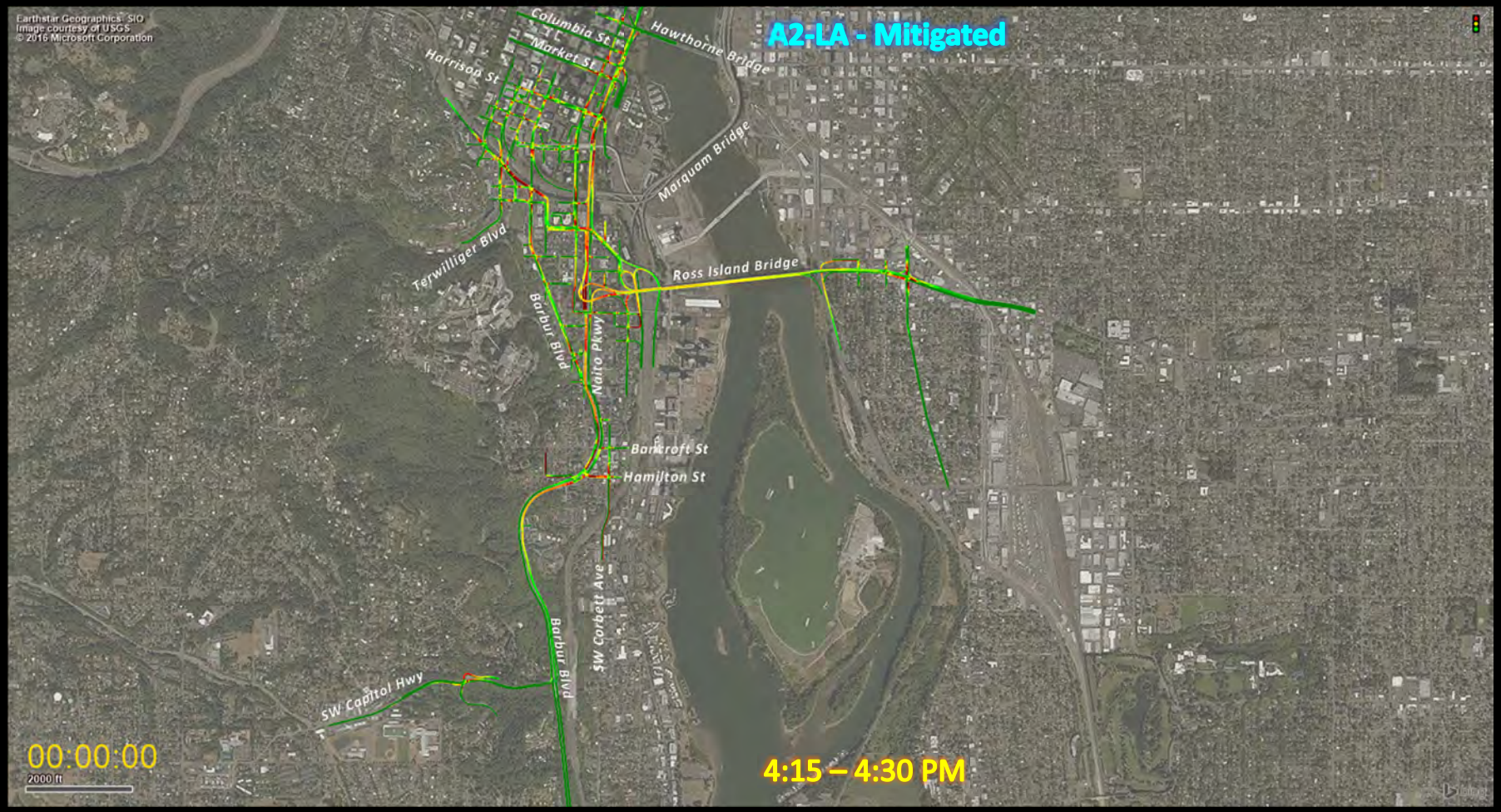
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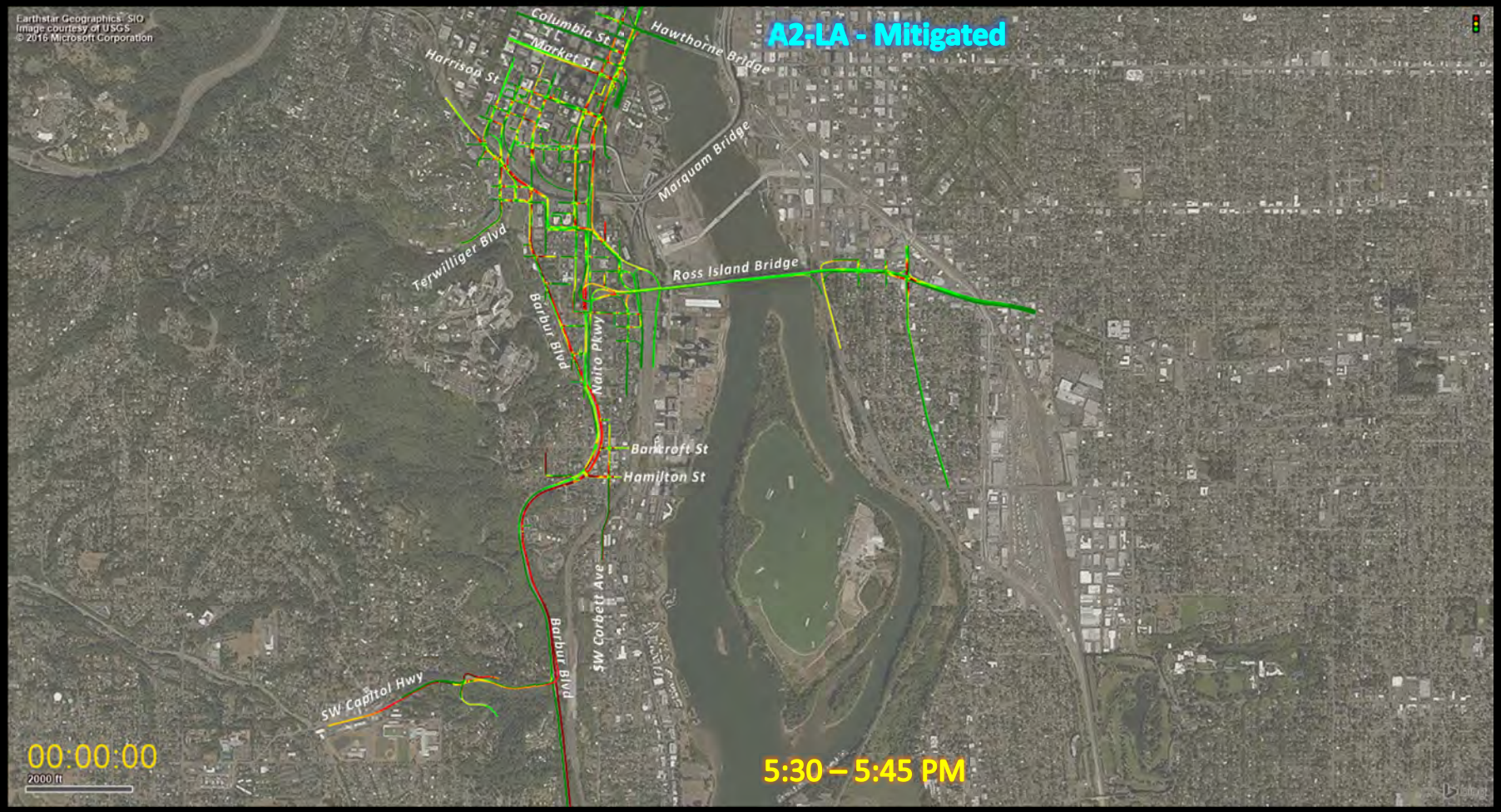
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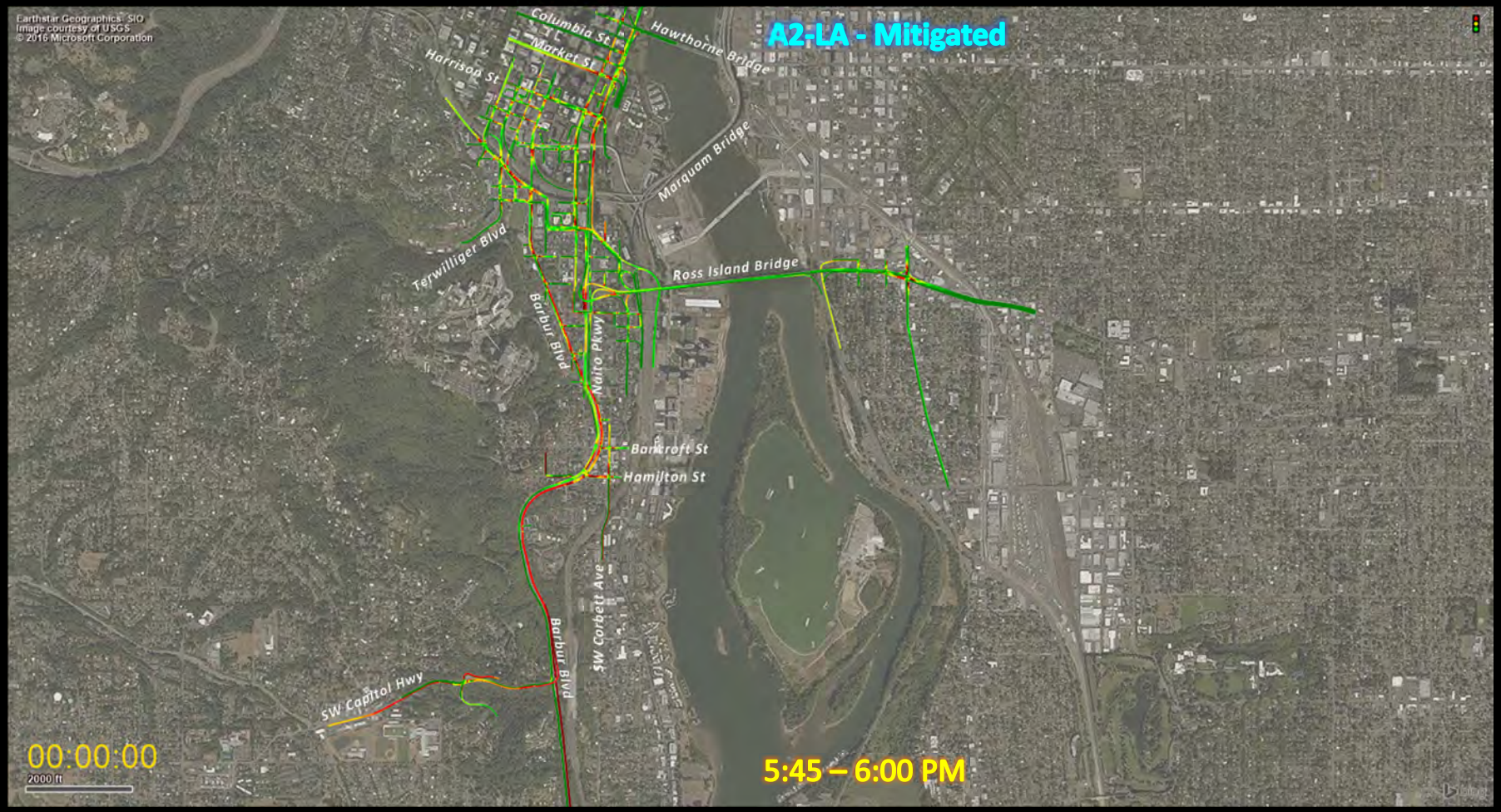
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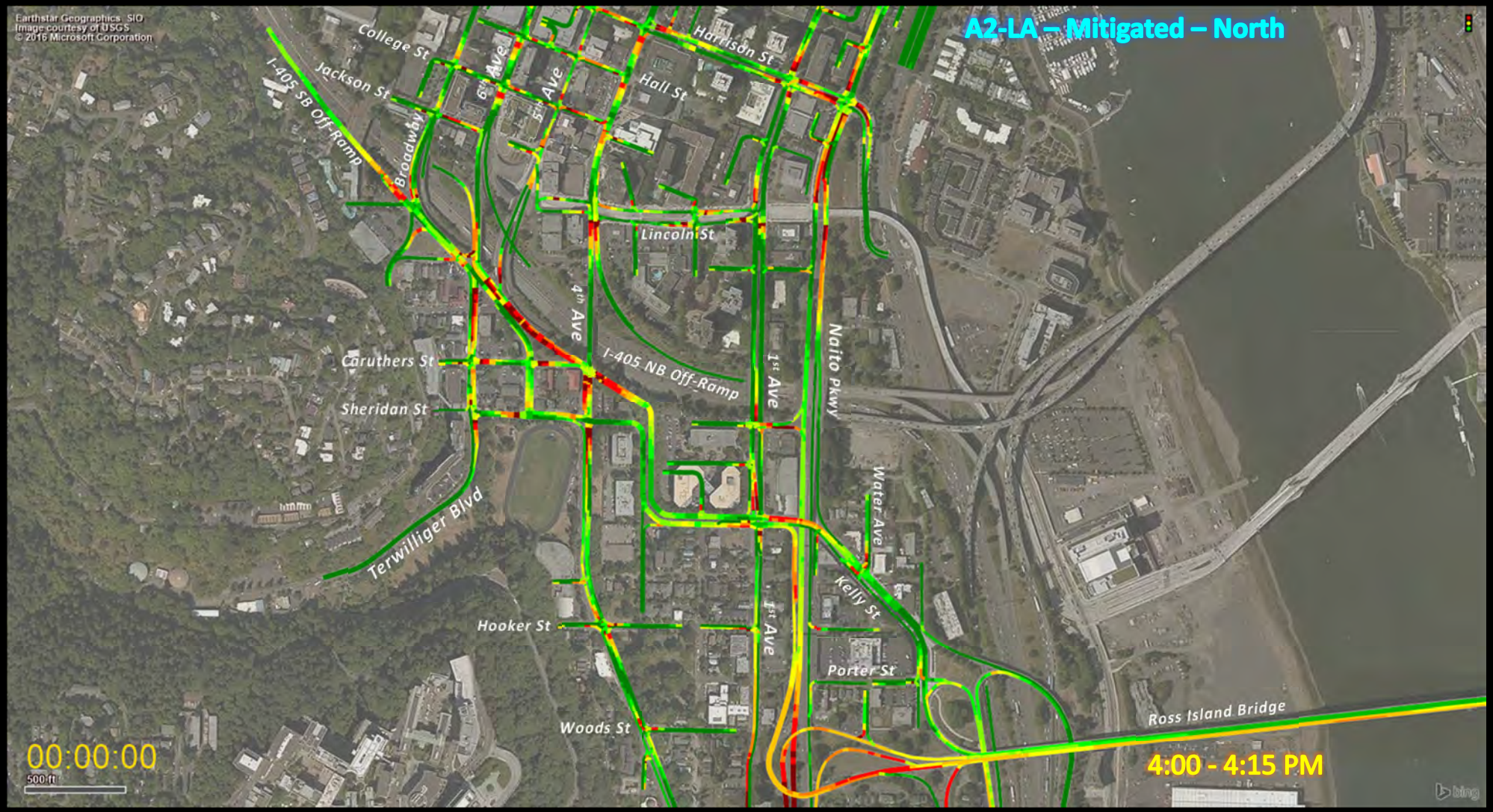
Alternative A2-LA – Mitigated: North

Naito Alignment + Limited Access & Mitigations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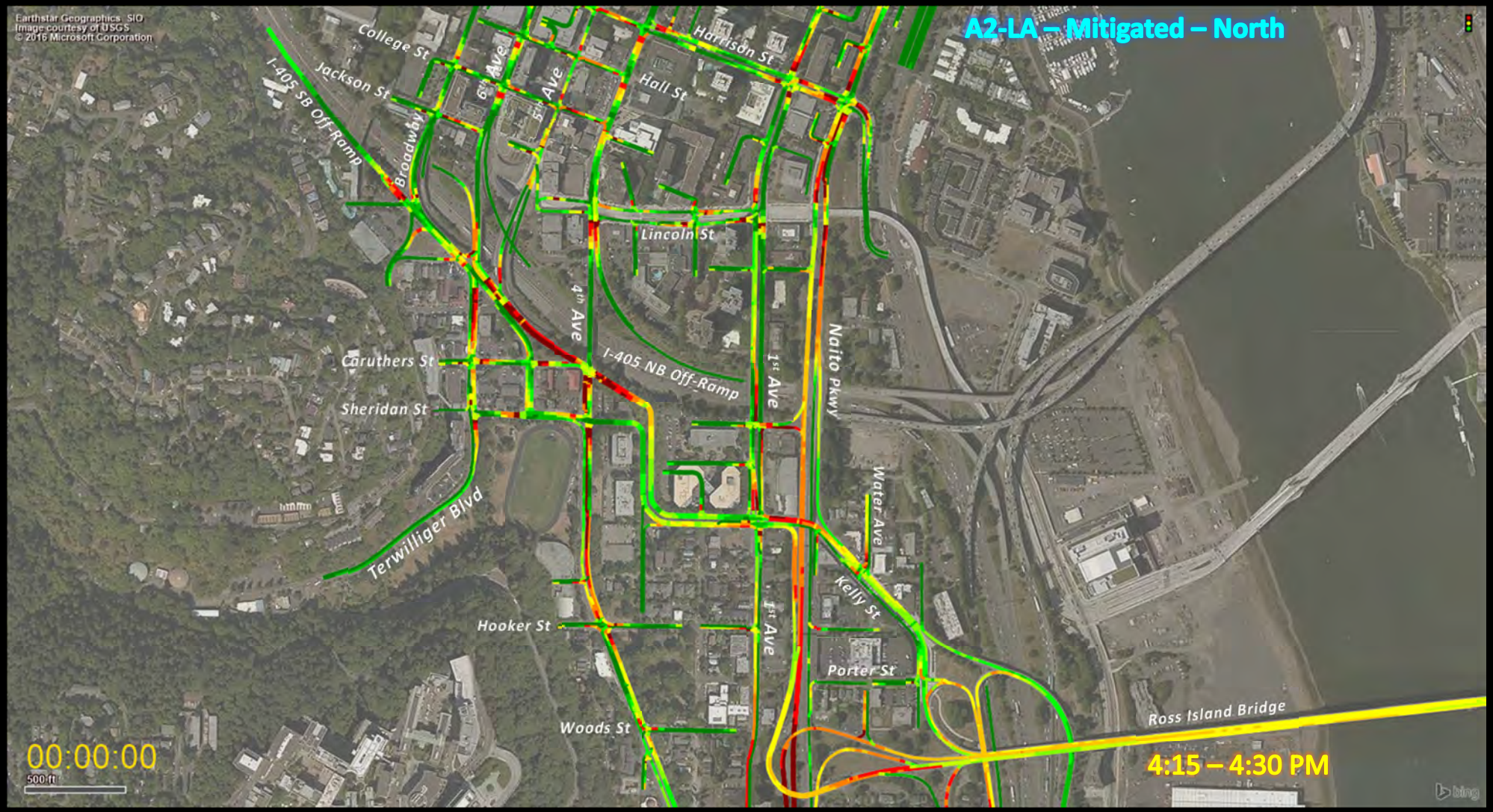
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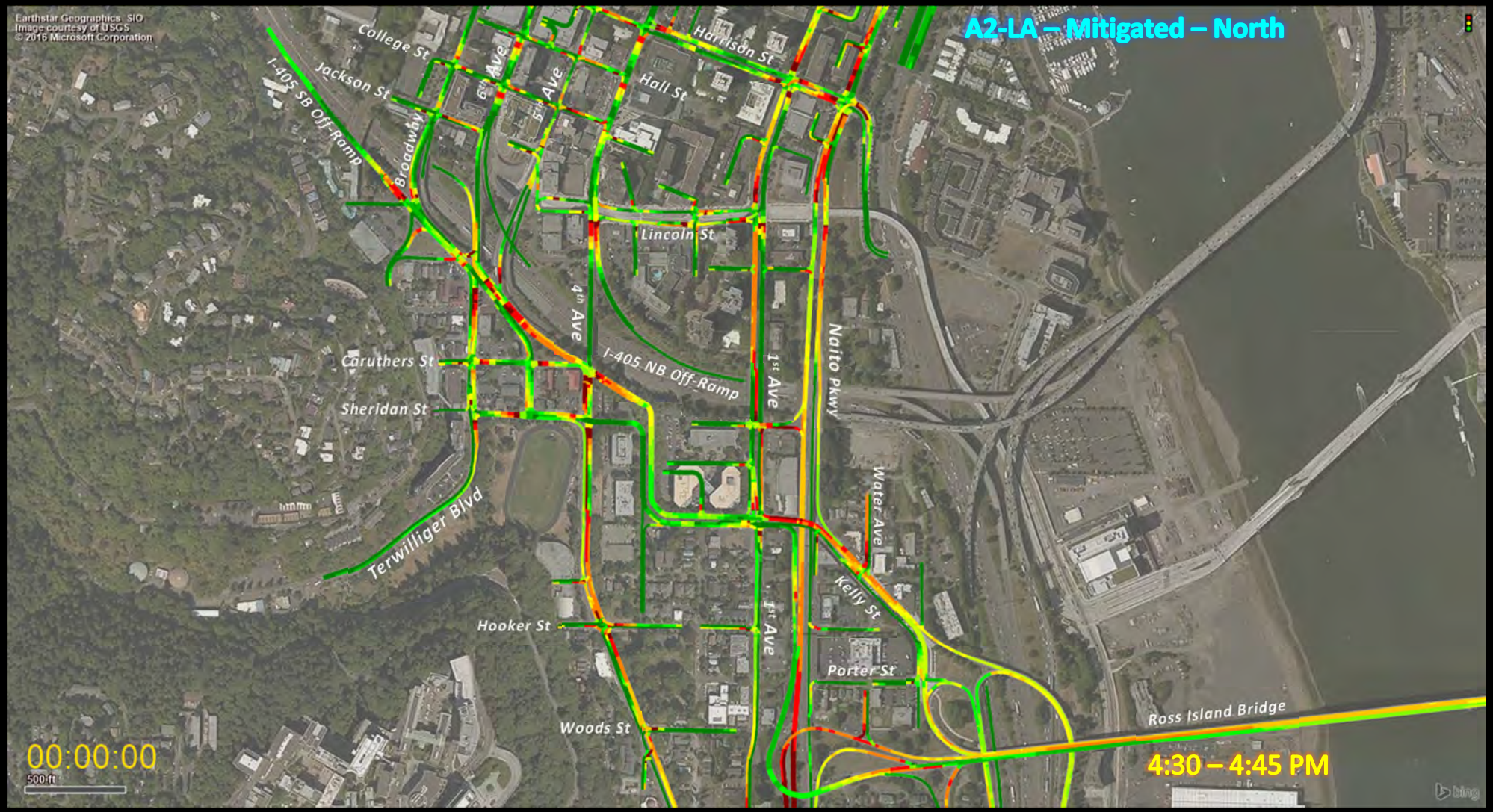
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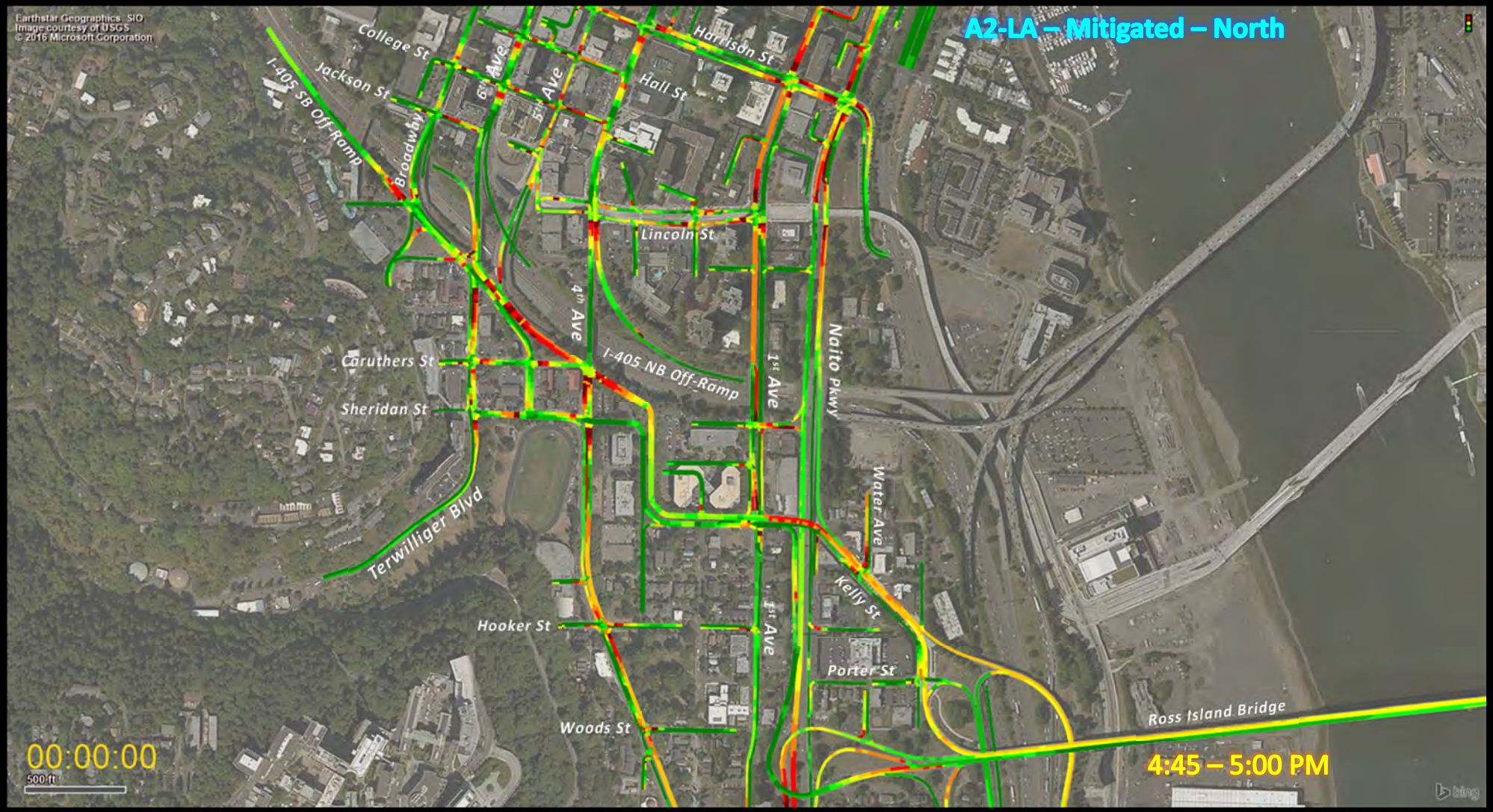
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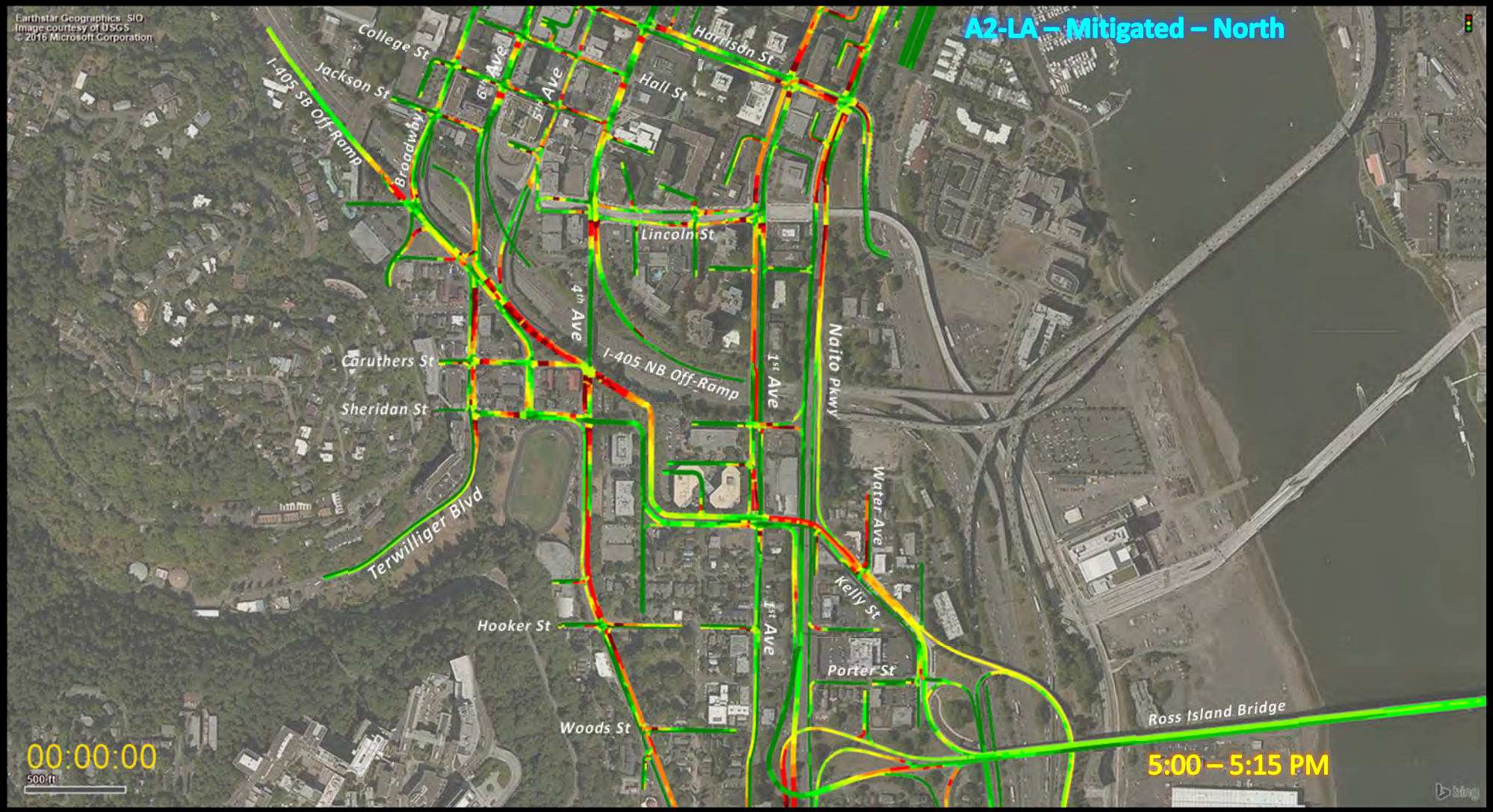
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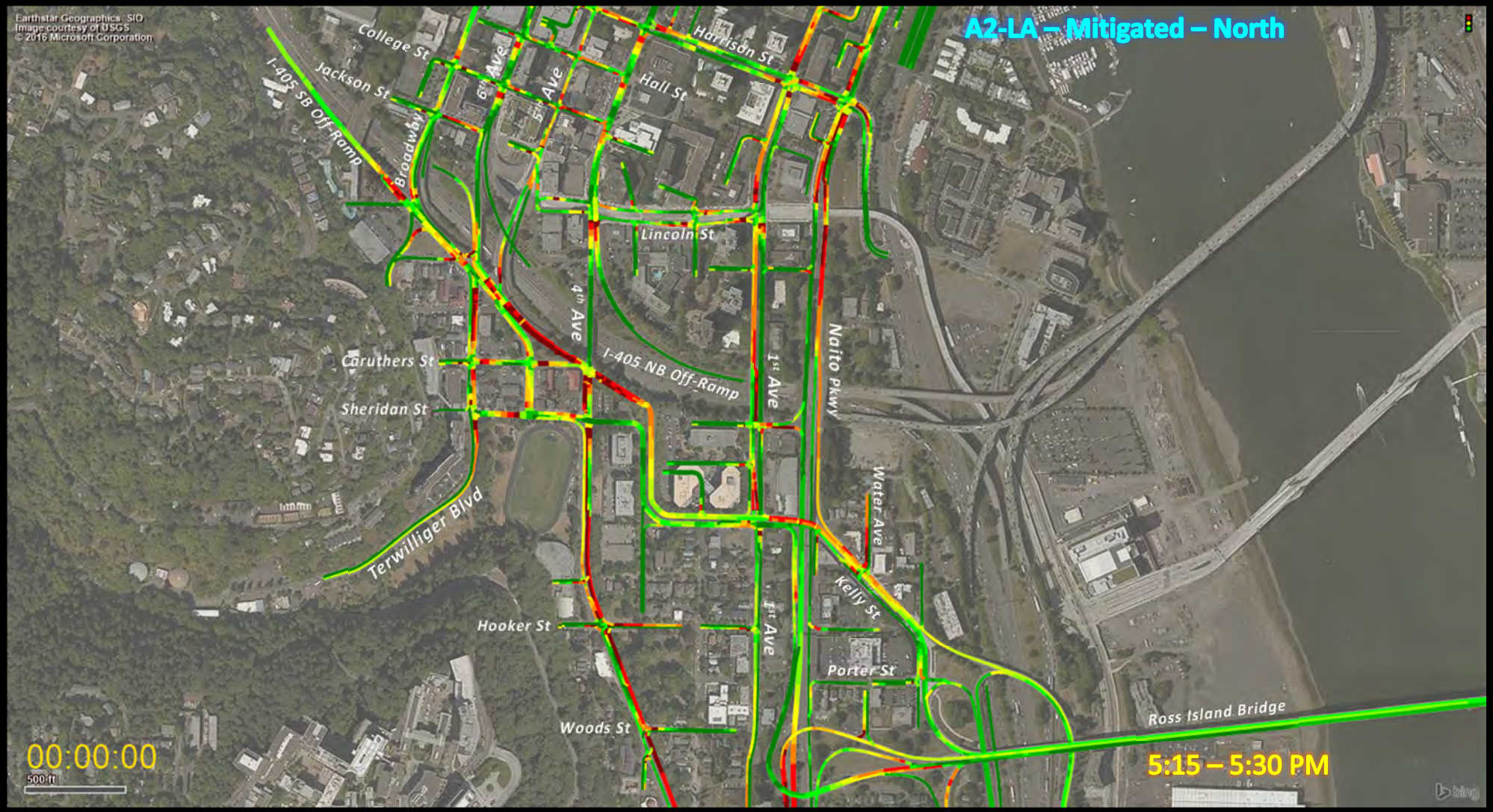
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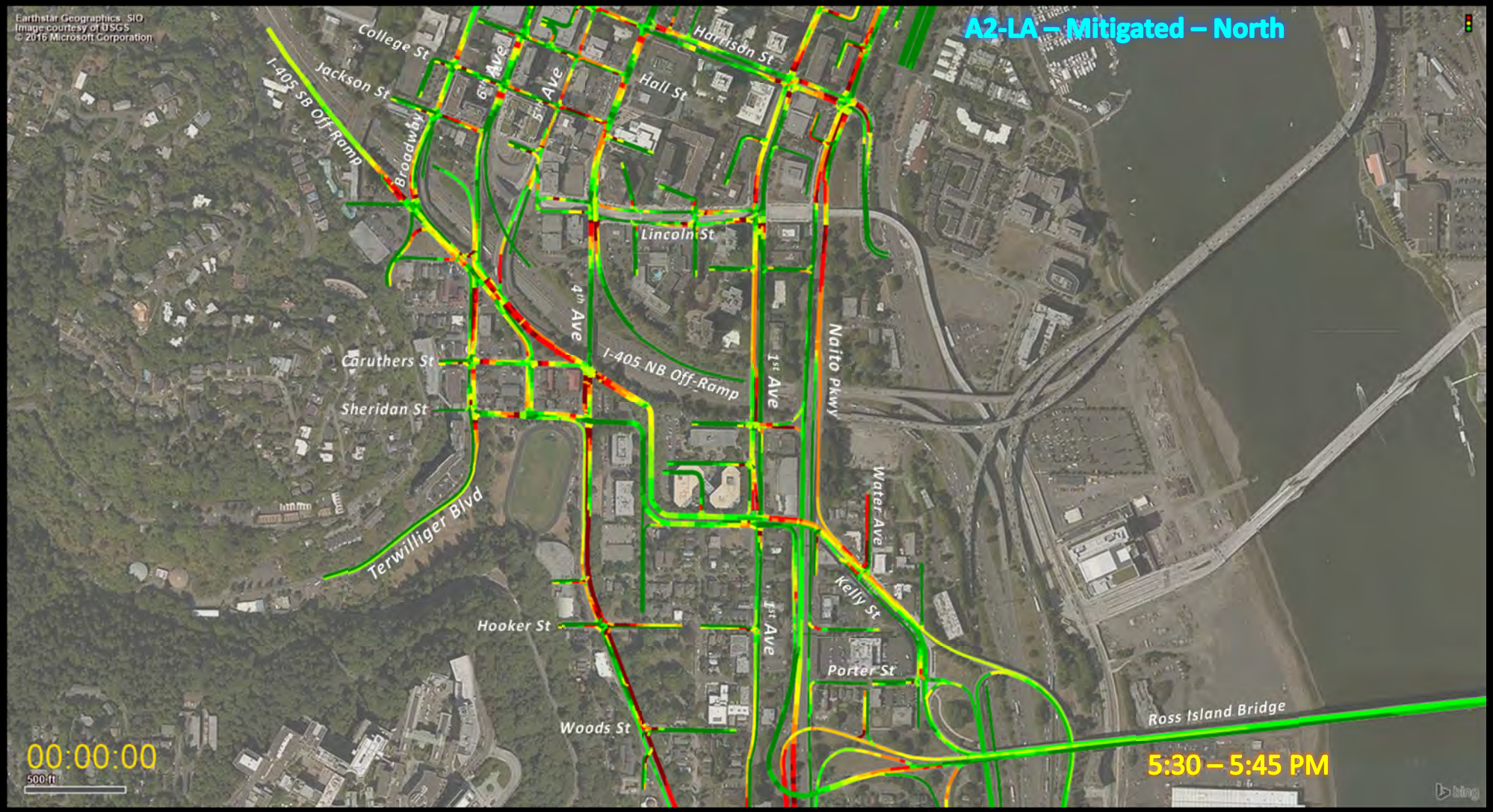
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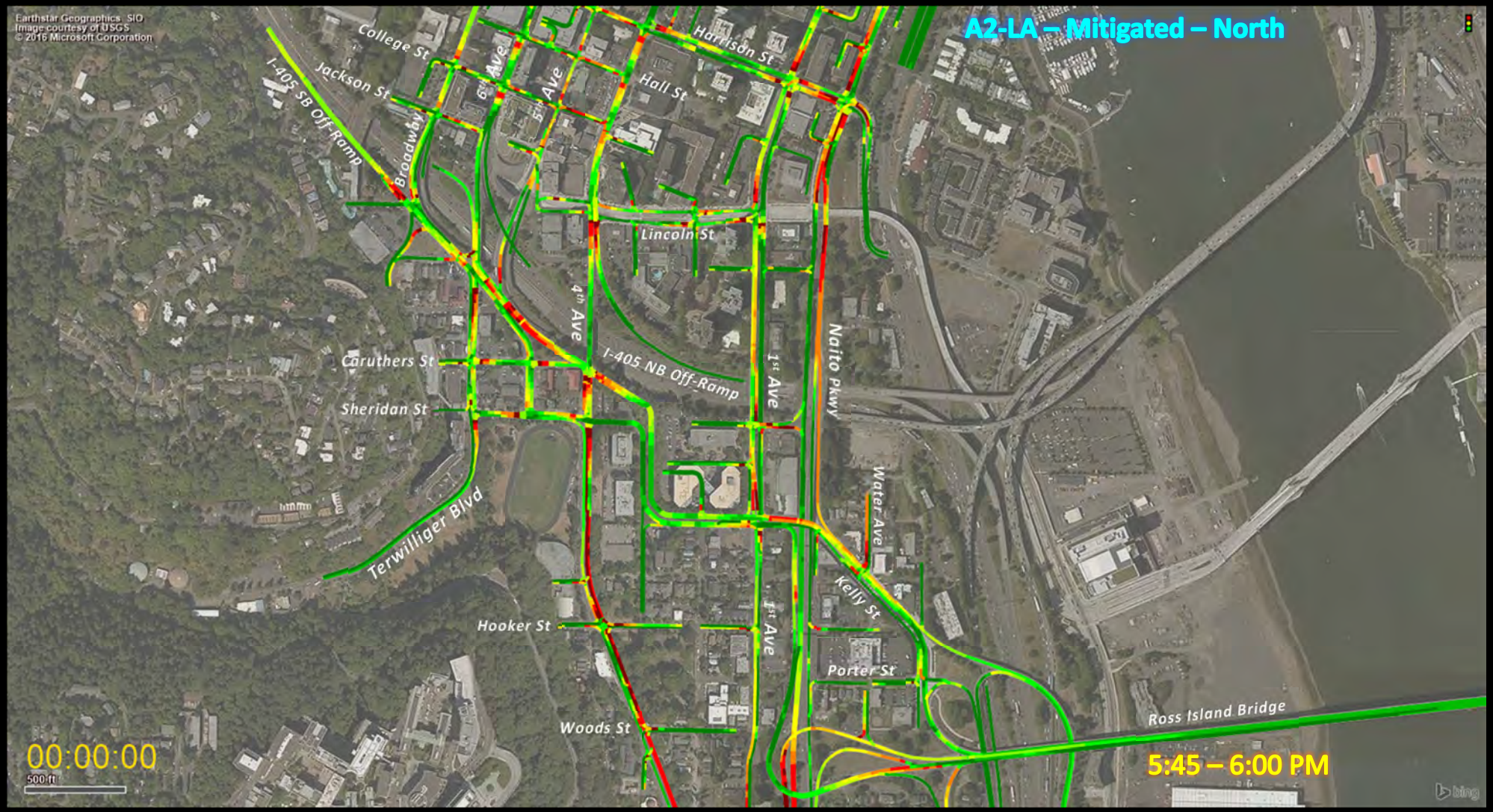
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Alternative A2-LA – Mitigated: South

Naito Alignment + Limited Access & Mitigations

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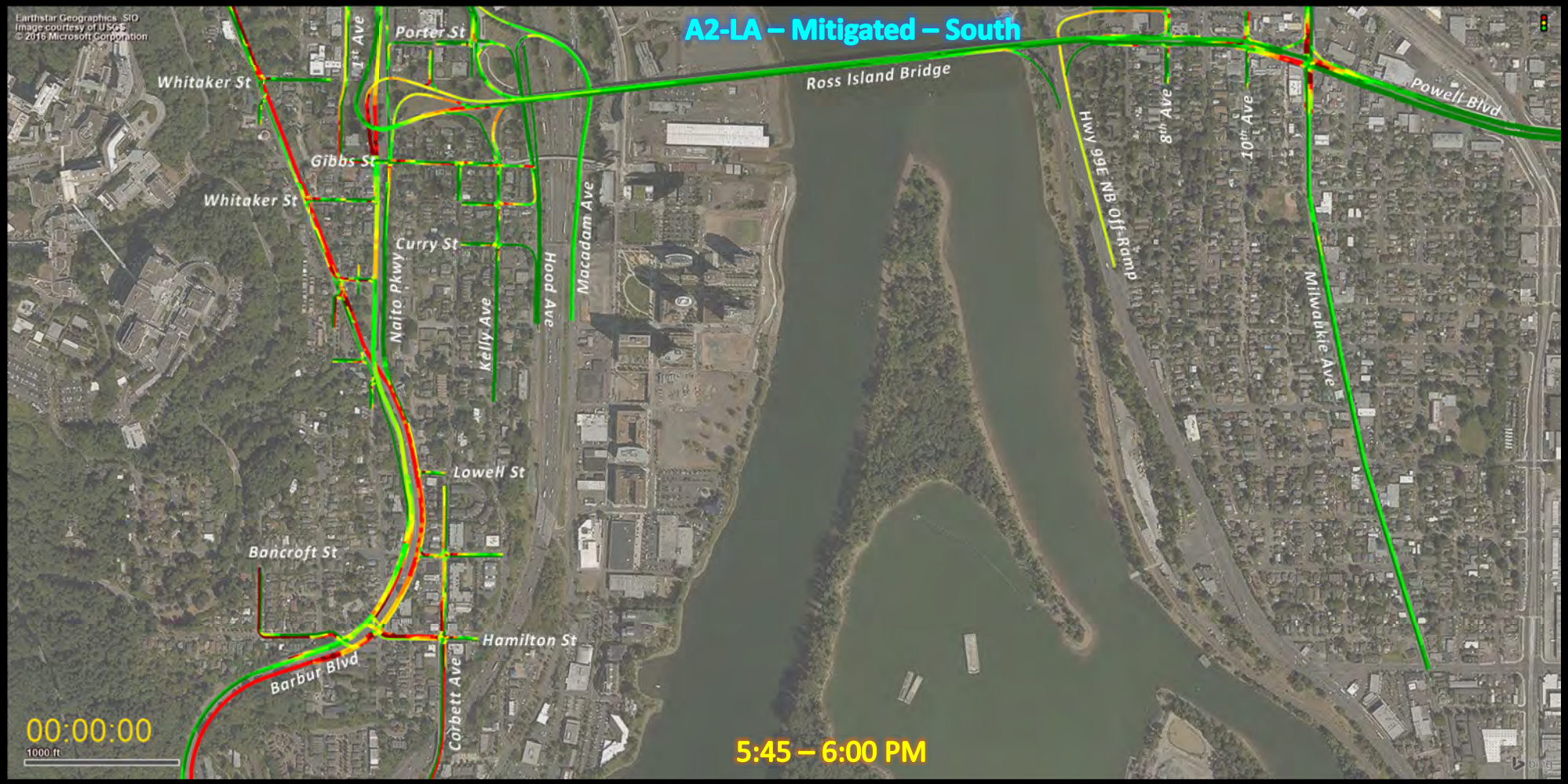
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Appendix HH

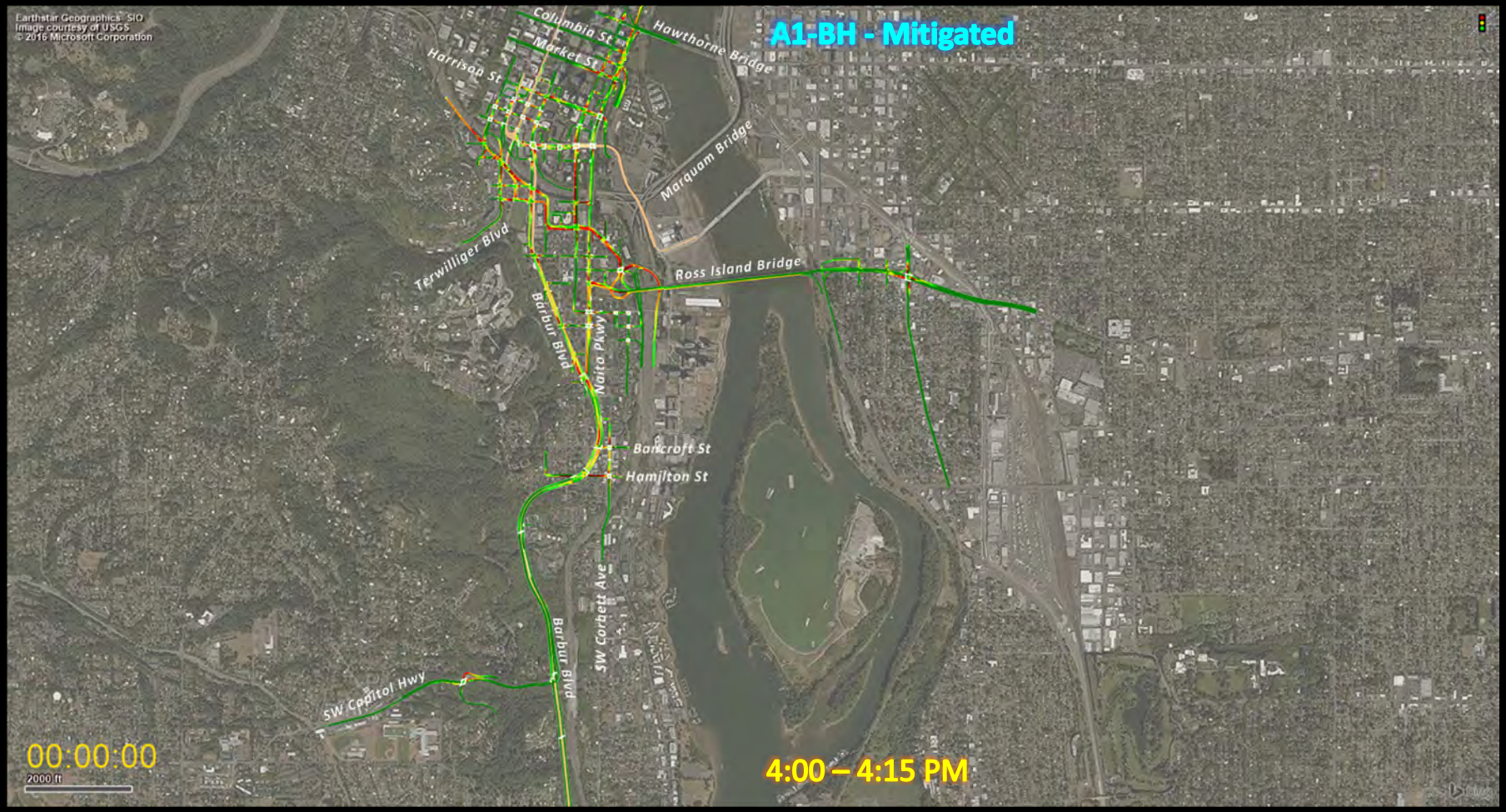
Mitigated Alternative A1-BH Vissim Model Queue Plots

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Alternative A1-BH – Mitigated: Full Study Area

Barbur Representative Alignment + Bridgehead & Mitigations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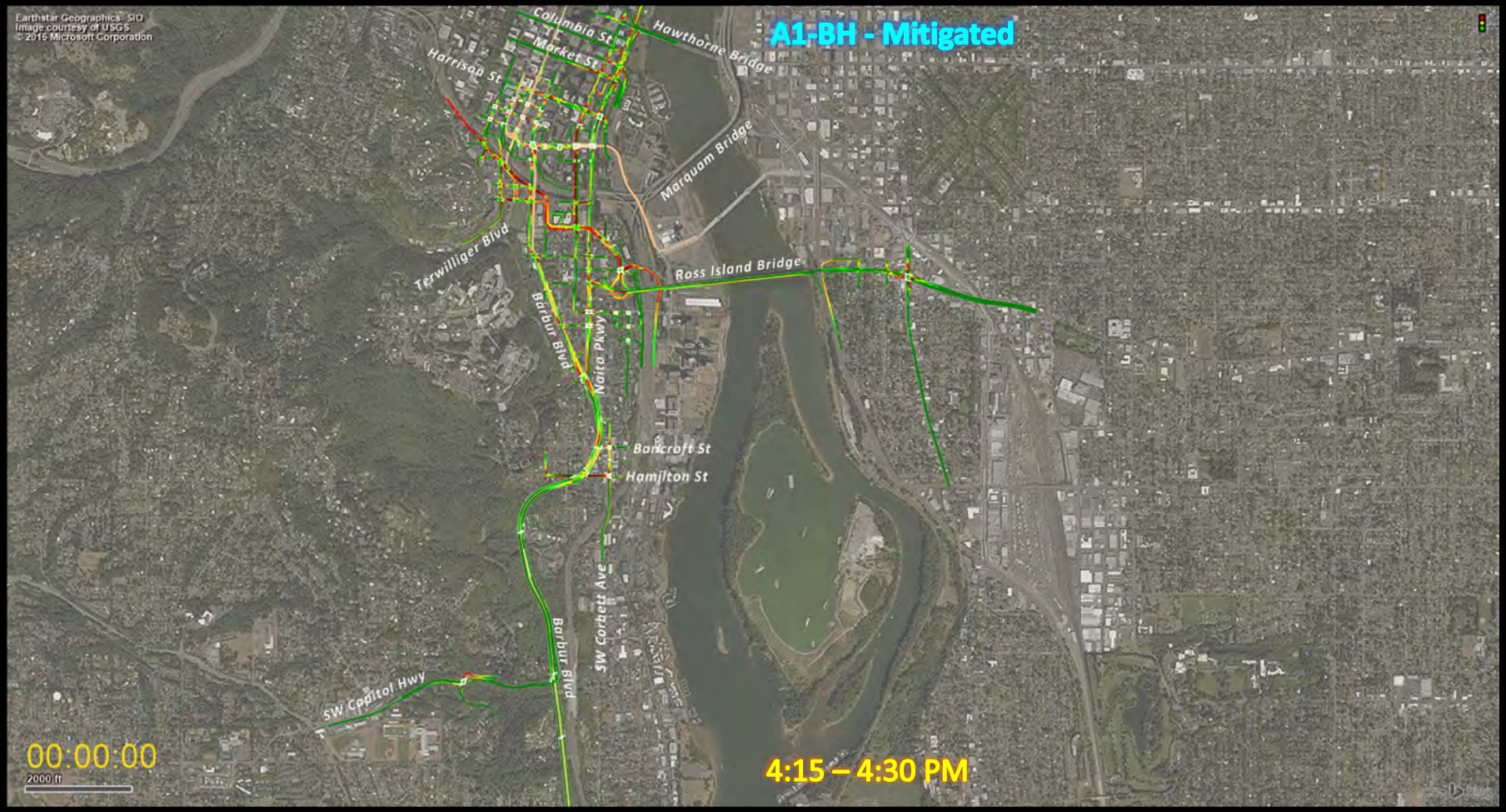
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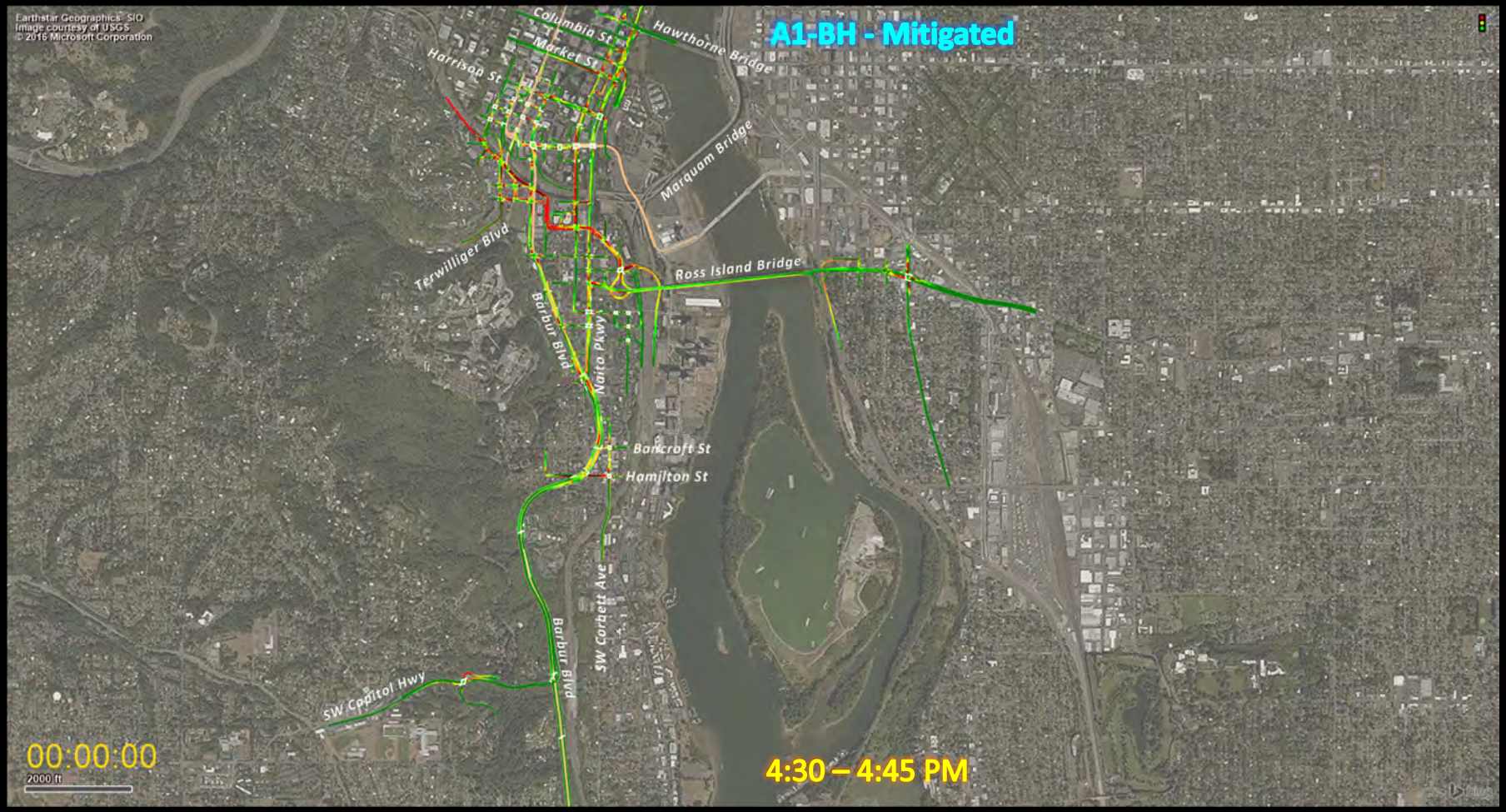
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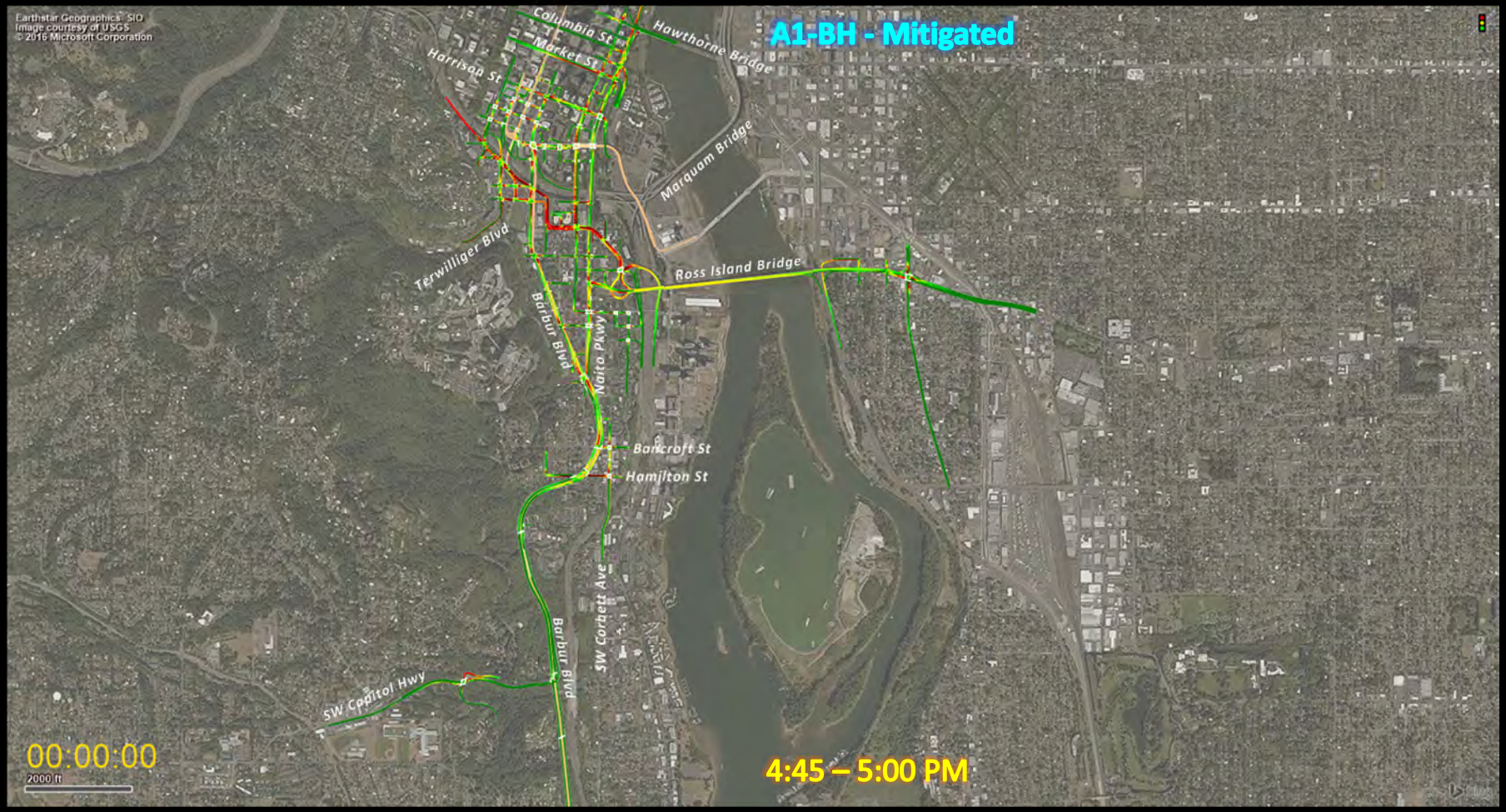
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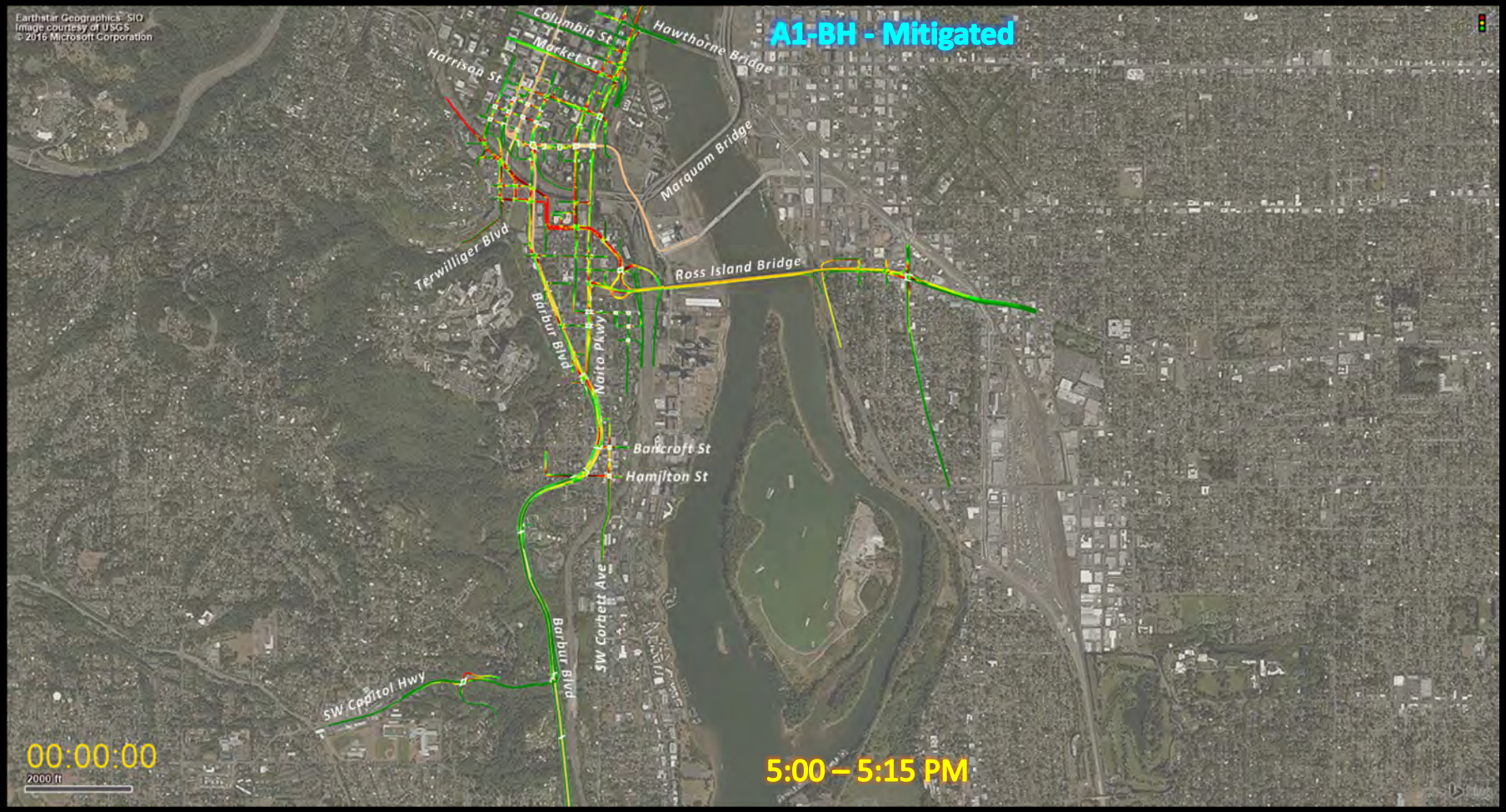
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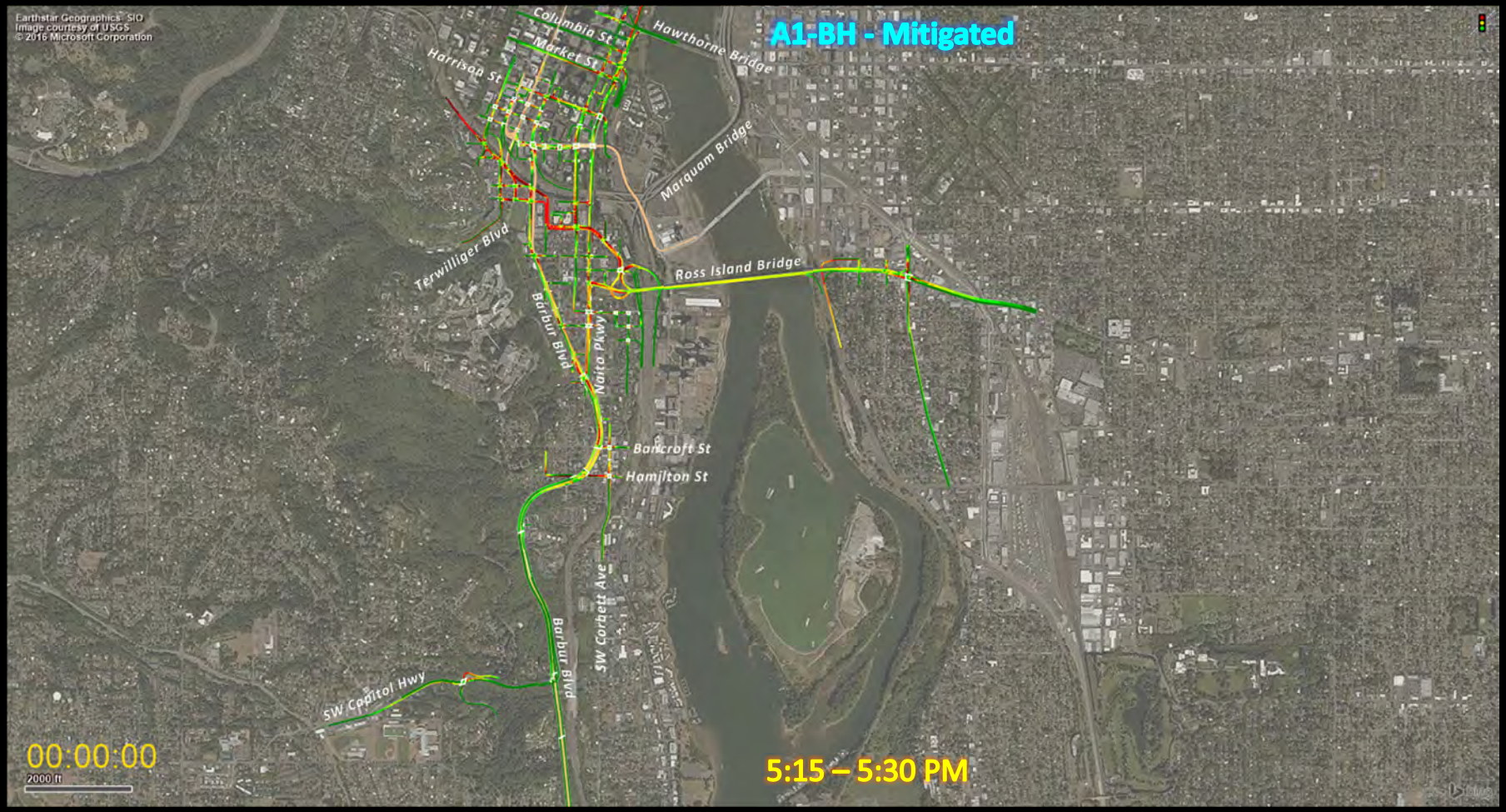
A1-BH - Mitigated
Earthstar Geographics SIO
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Columbia St
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Ross Island Bridge
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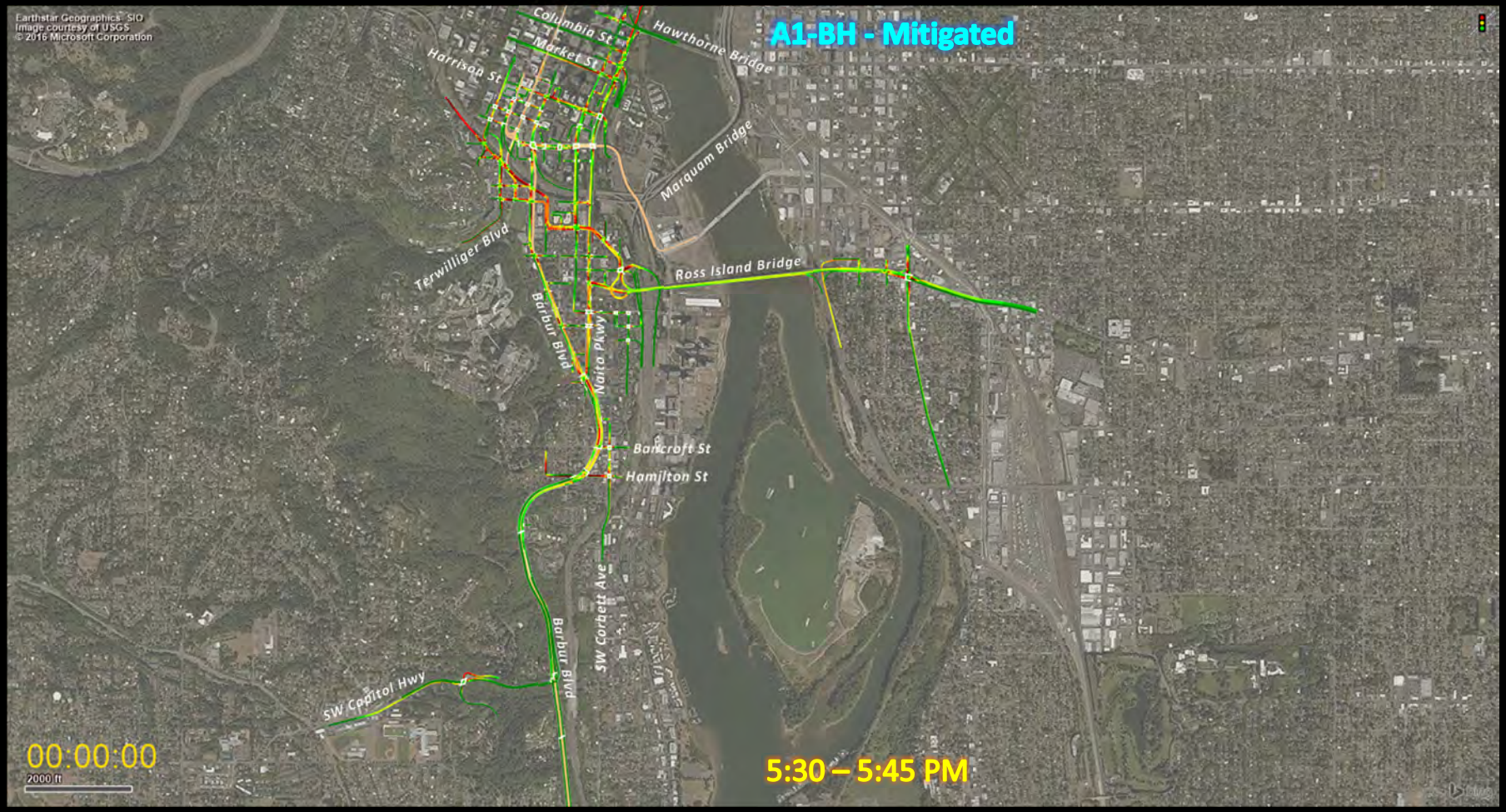
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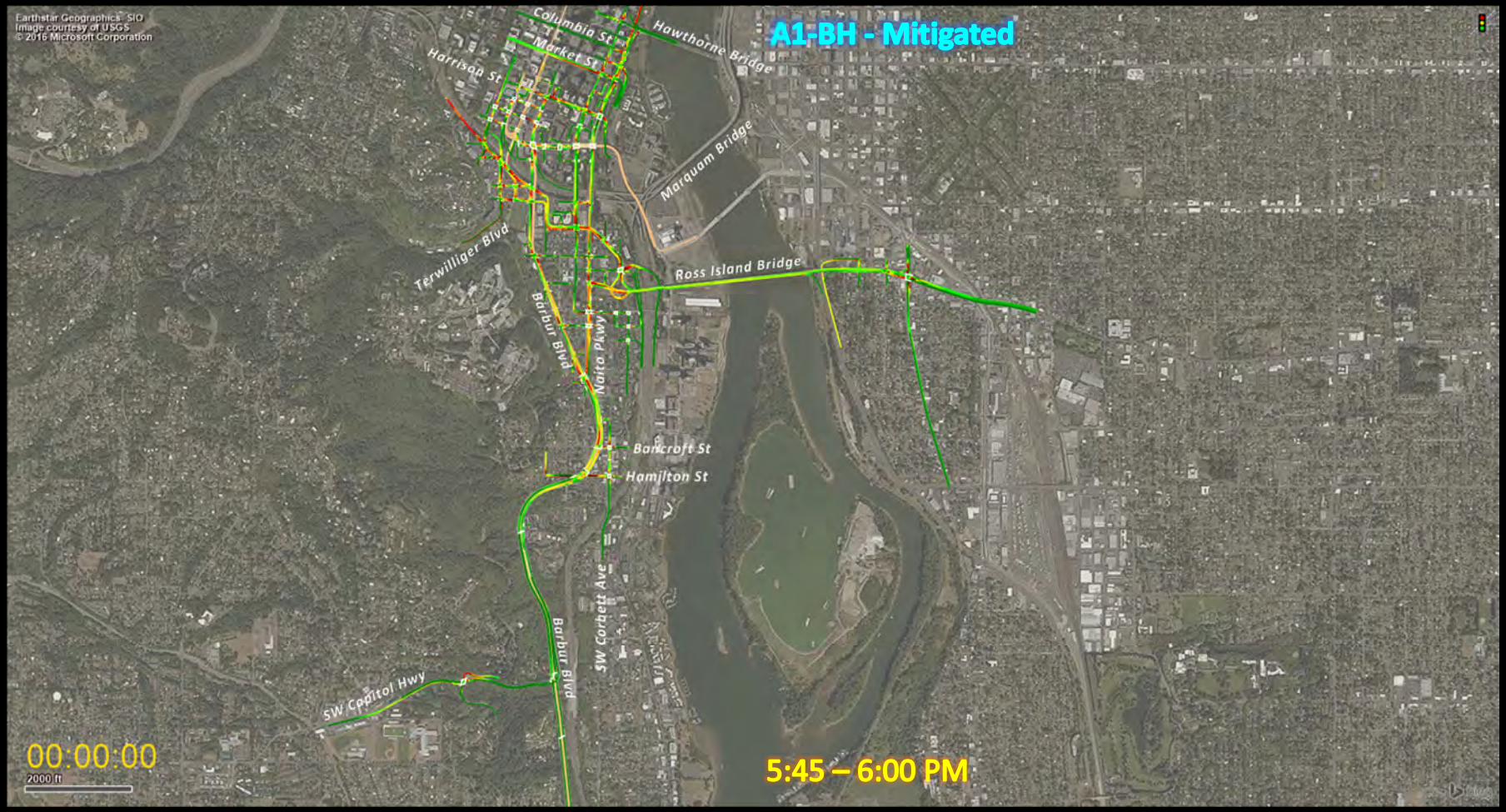
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Earthstar Geographics SIO
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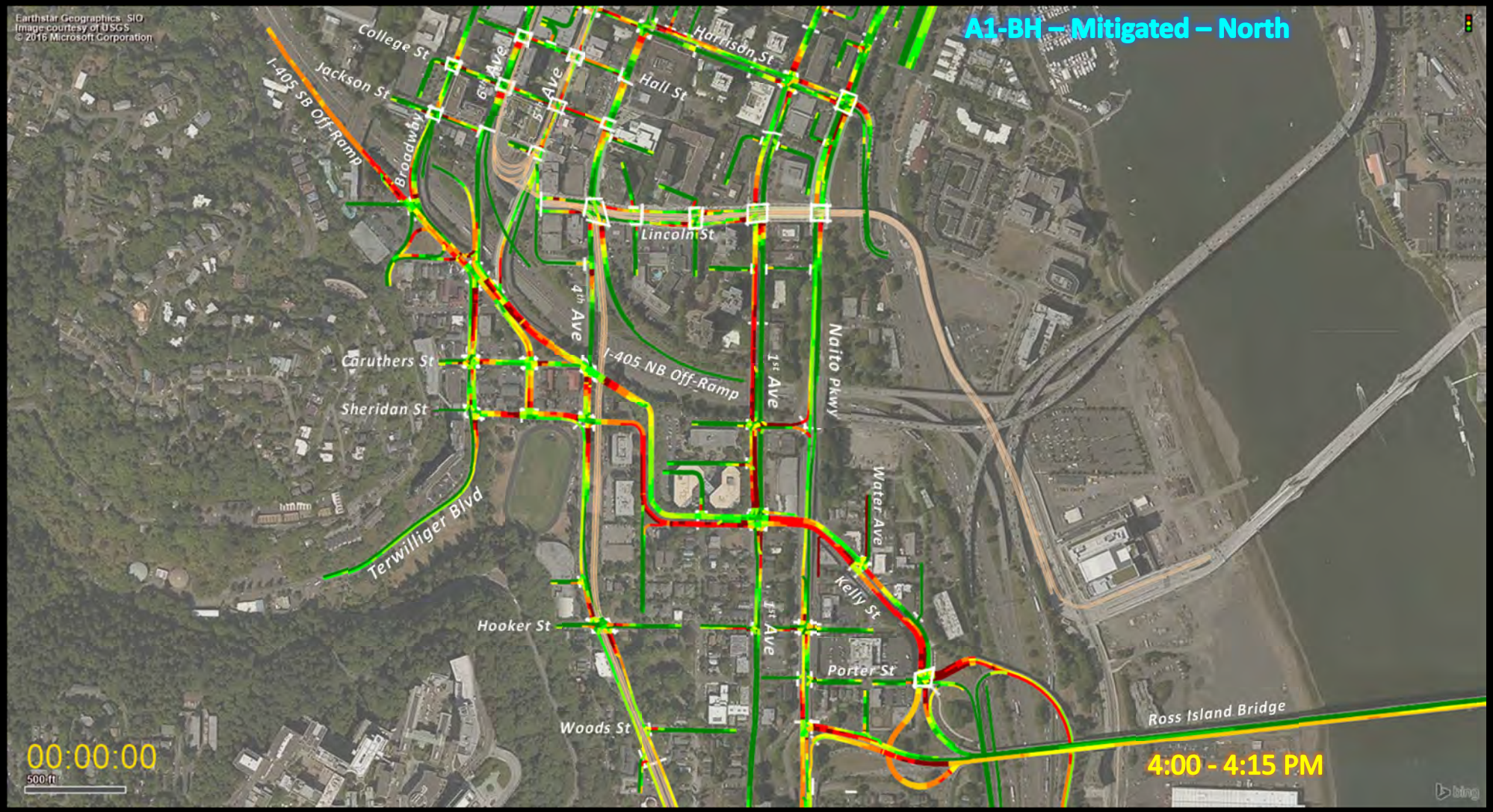
Alternative A1-BH – Mitigated: North

Barbur Representative Alignment + Bridgehead & Mitigations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Earthstar Geographics, SIO
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College St
Jackson St
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1st Ave
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Caruthers St
Sheridan St
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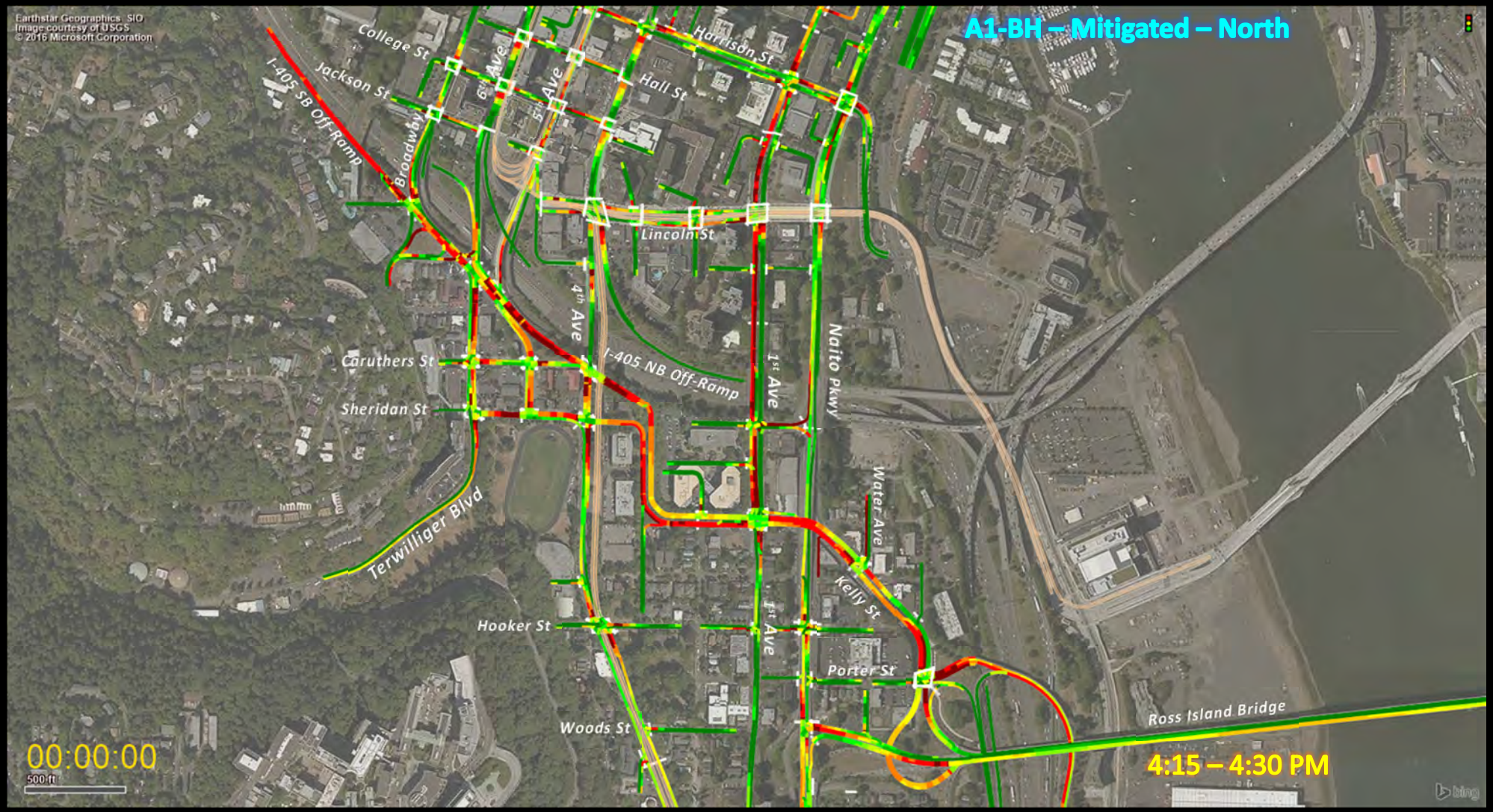
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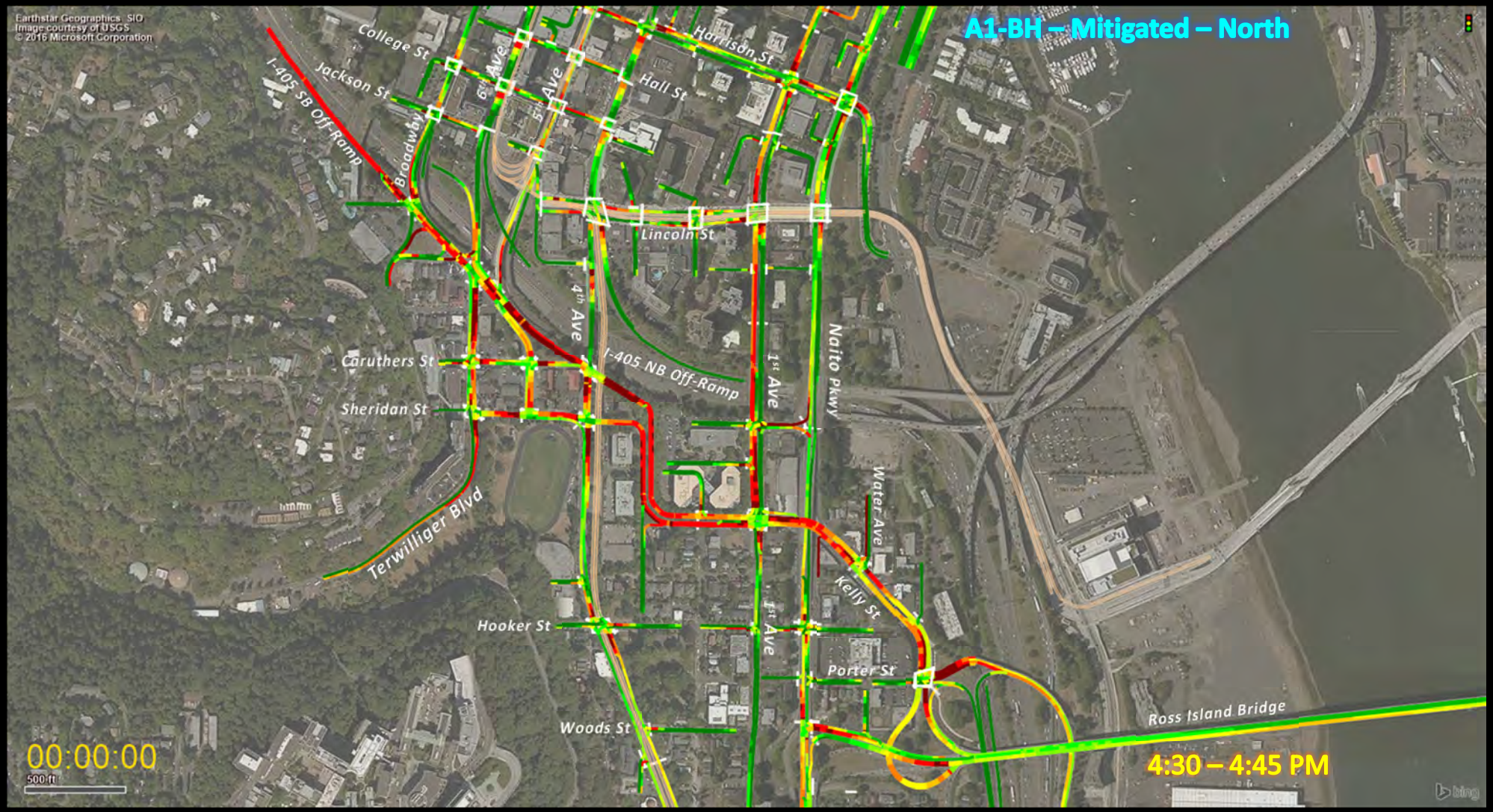
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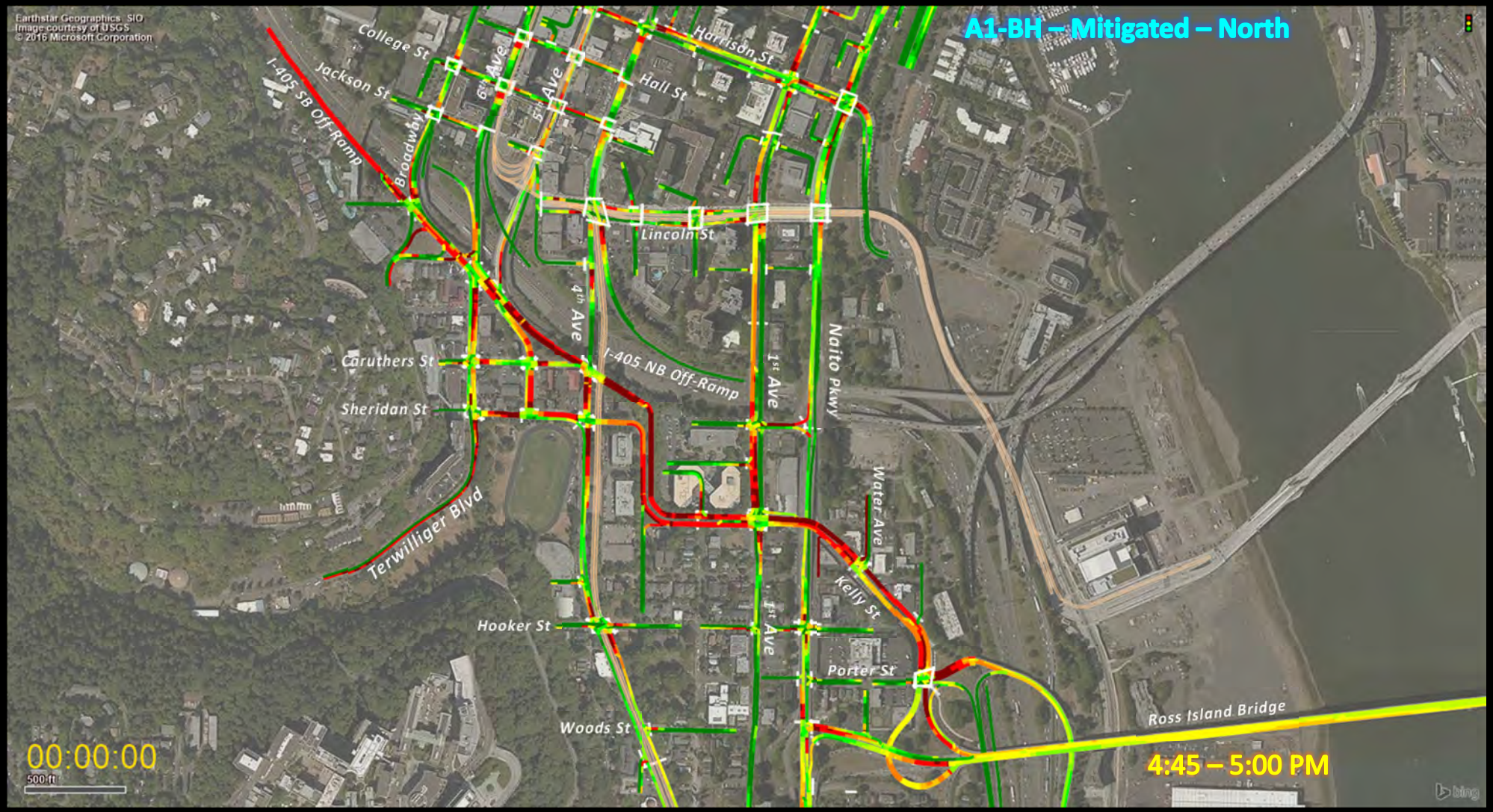
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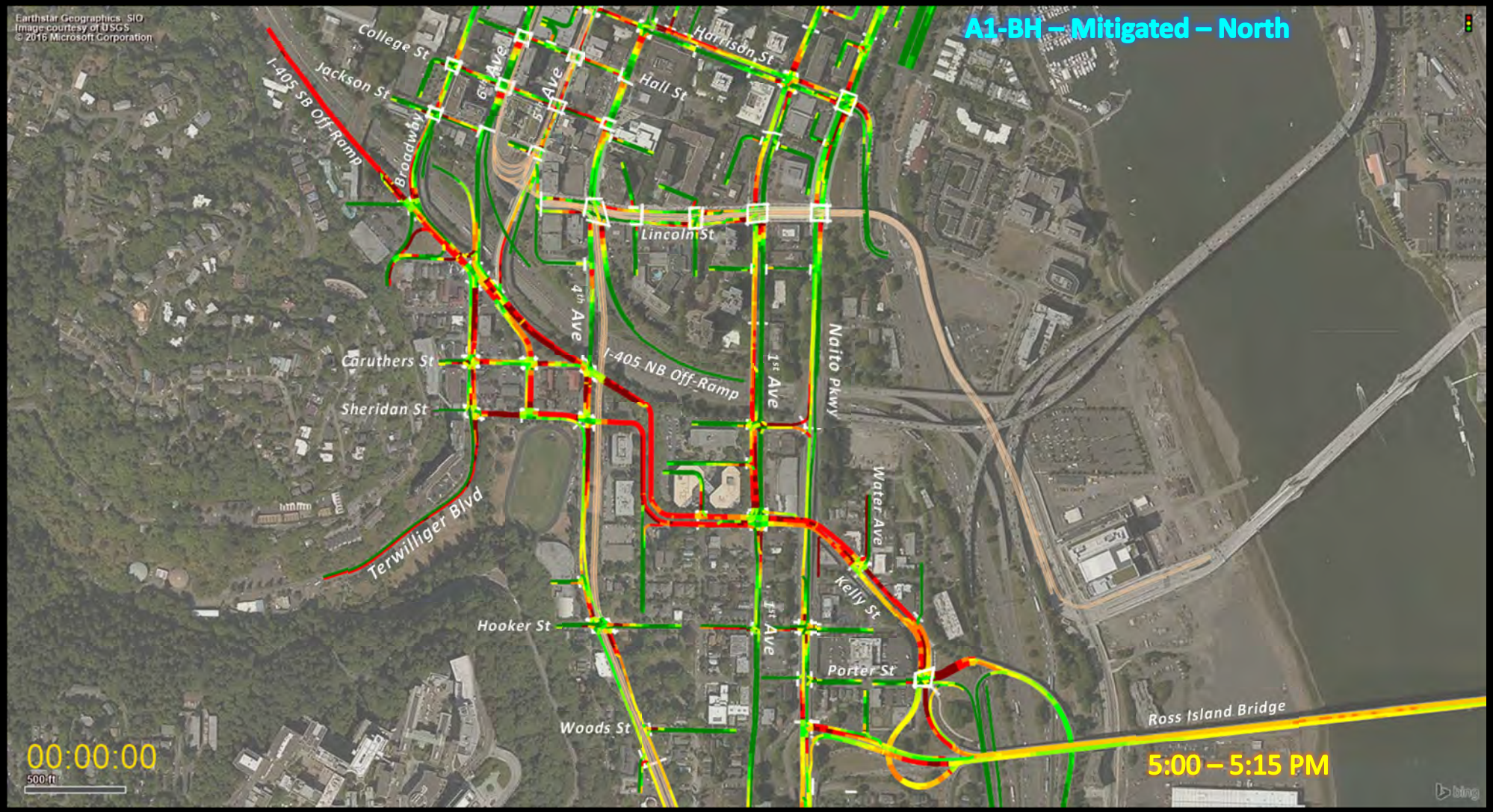
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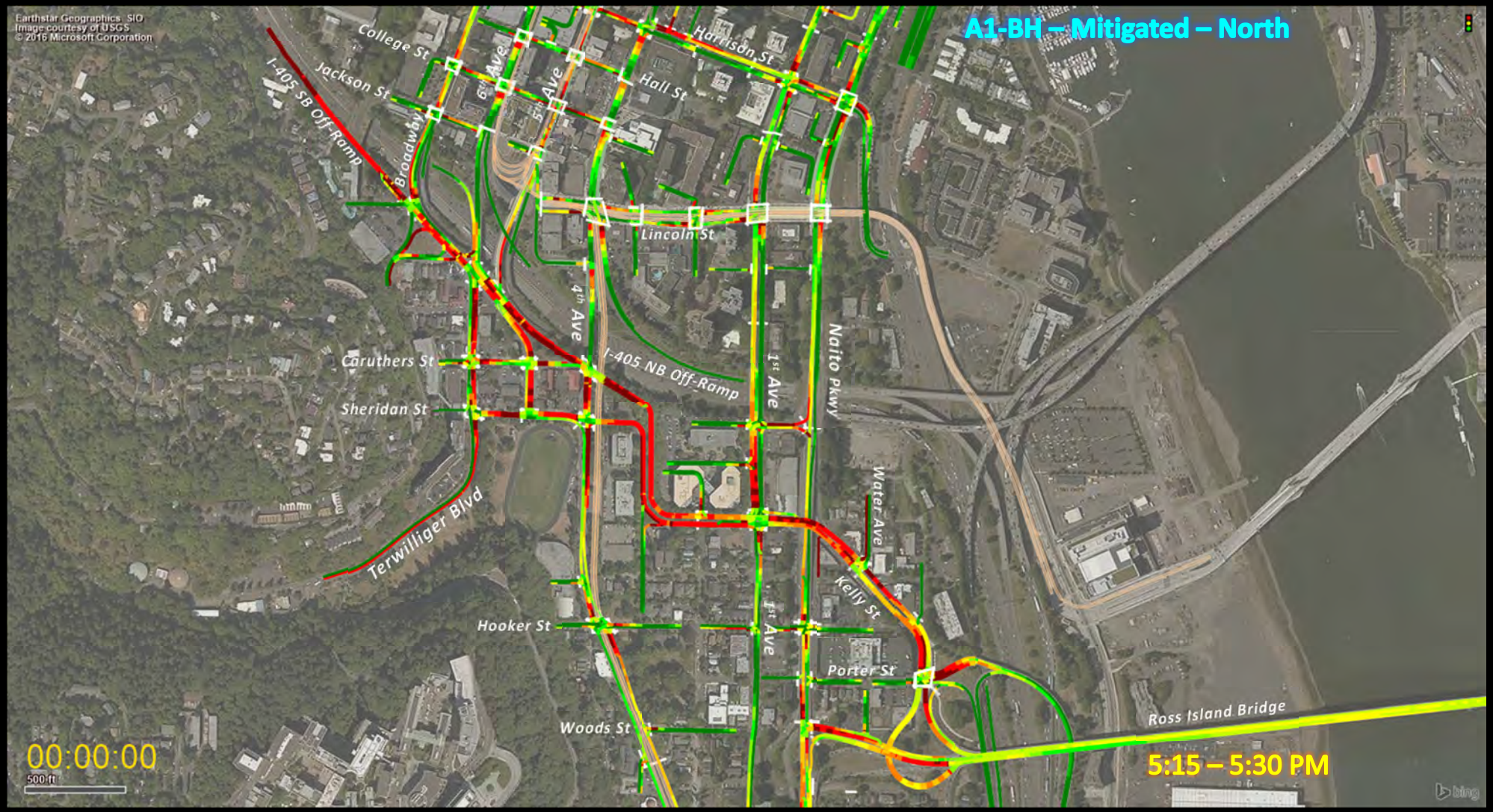
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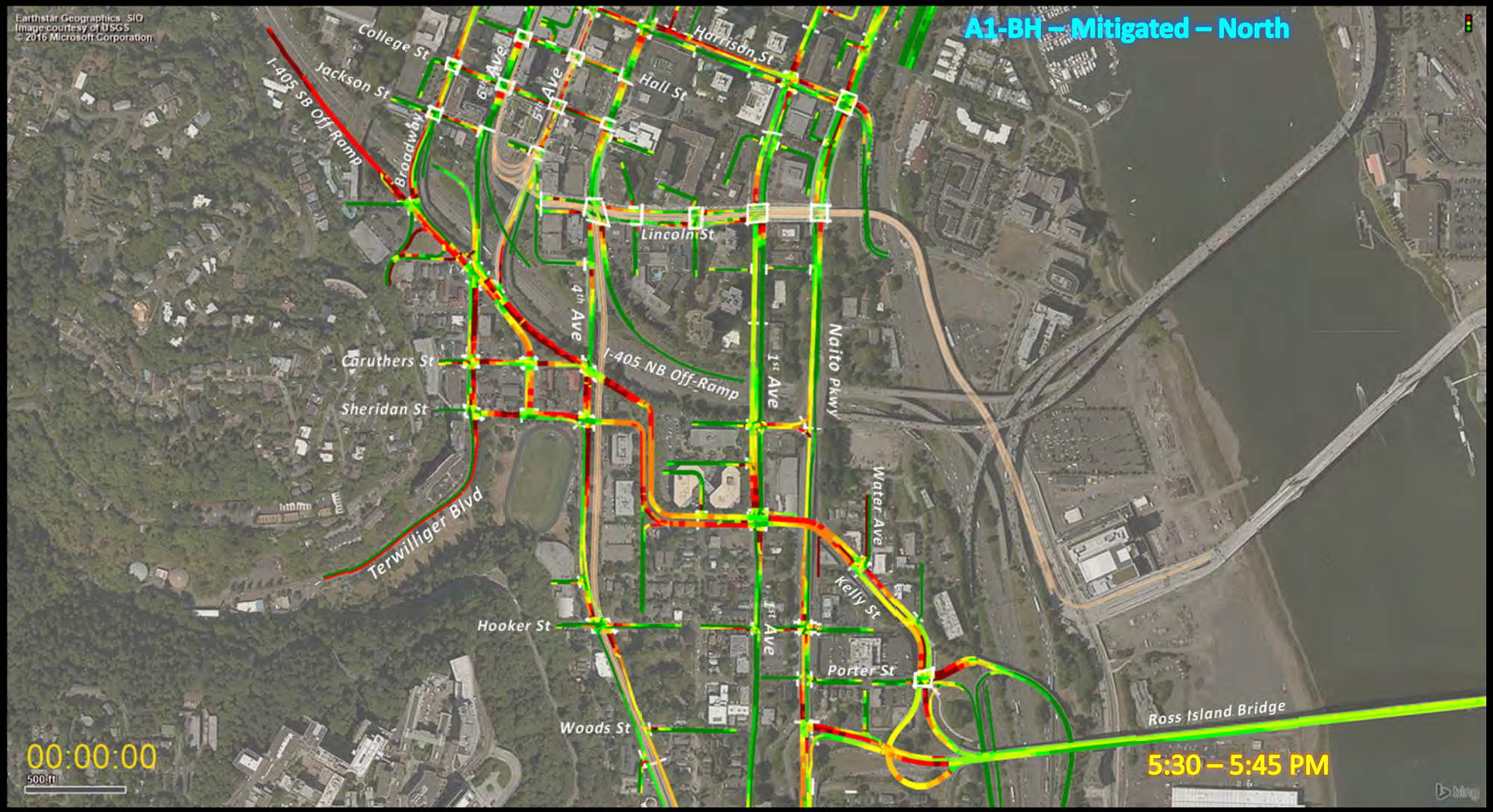
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Earthstar Geographics, SIO
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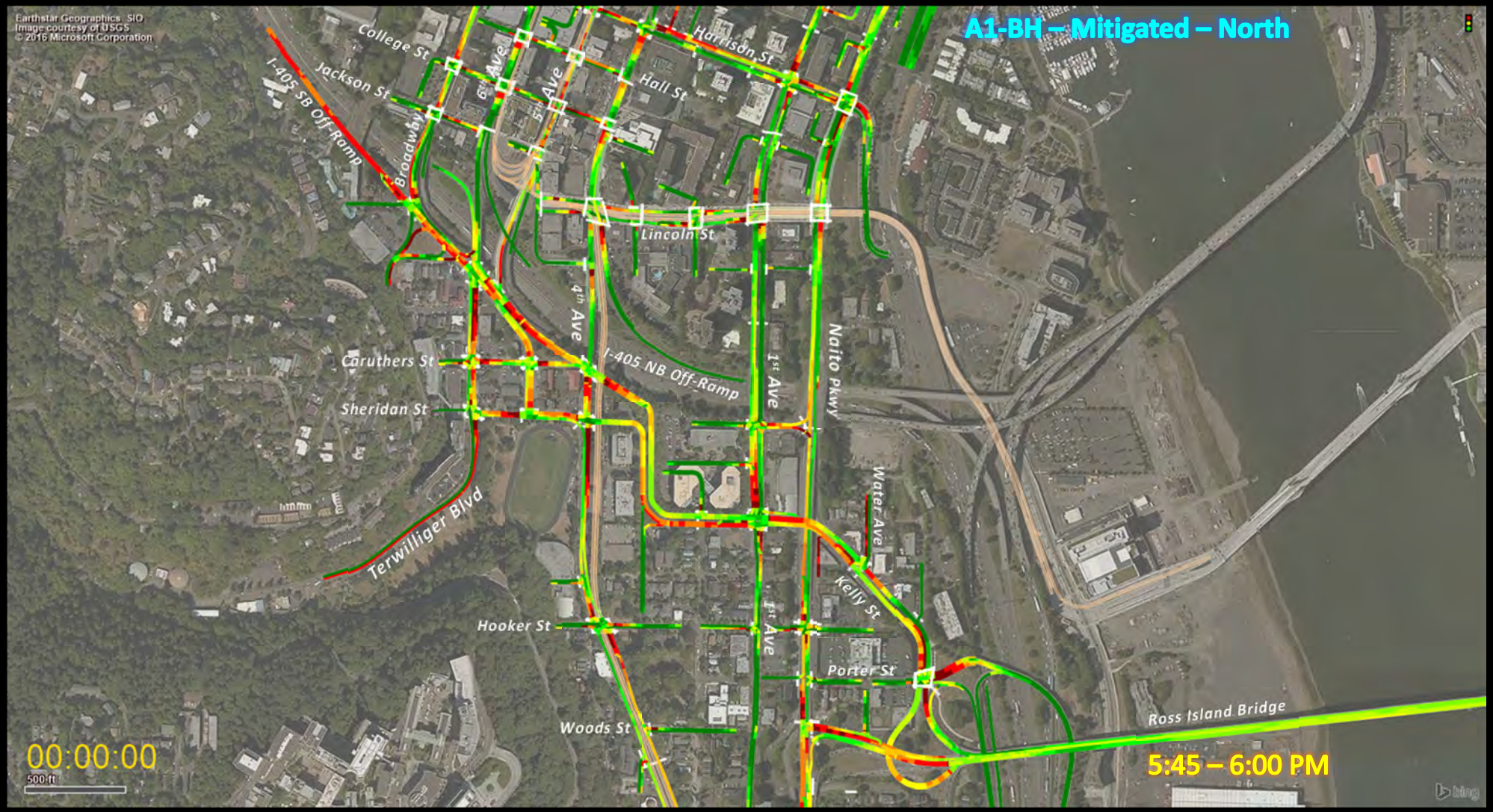
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Alternative A1-BH – Mitigated: South

Barbur Representative Alignment + Bridgehead & Mitigations

A1-BH – Mitigated – North
Earthstar Geographics, SIO
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Porter St
1st Ave
Whitaker St
Ross Island Bridge
Powell Blvd
Gibbs St
Whitaker St
Curry St
Naito Pkwy
Kelly Ave
Hood Ave
Macadam Ave
Hwy 99E NB Off-Ramp
8th Ave
10th Ave
Milwaukie Ave
Lowell St
Bancroft St
Hamilton St
Barbur Blvd
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A1-BH – Mitigated – South
Earthstar Geographics SIO
Image courtesy of USGS
© 2016 Microsoft Corporation
Porter St
Whitaker St
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Ross Island Bridge
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A1-BH – Mitigated – South
Earthstar Geographics SIO
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A1-BH – Mitigated – South
Earthstar Geographics SIO
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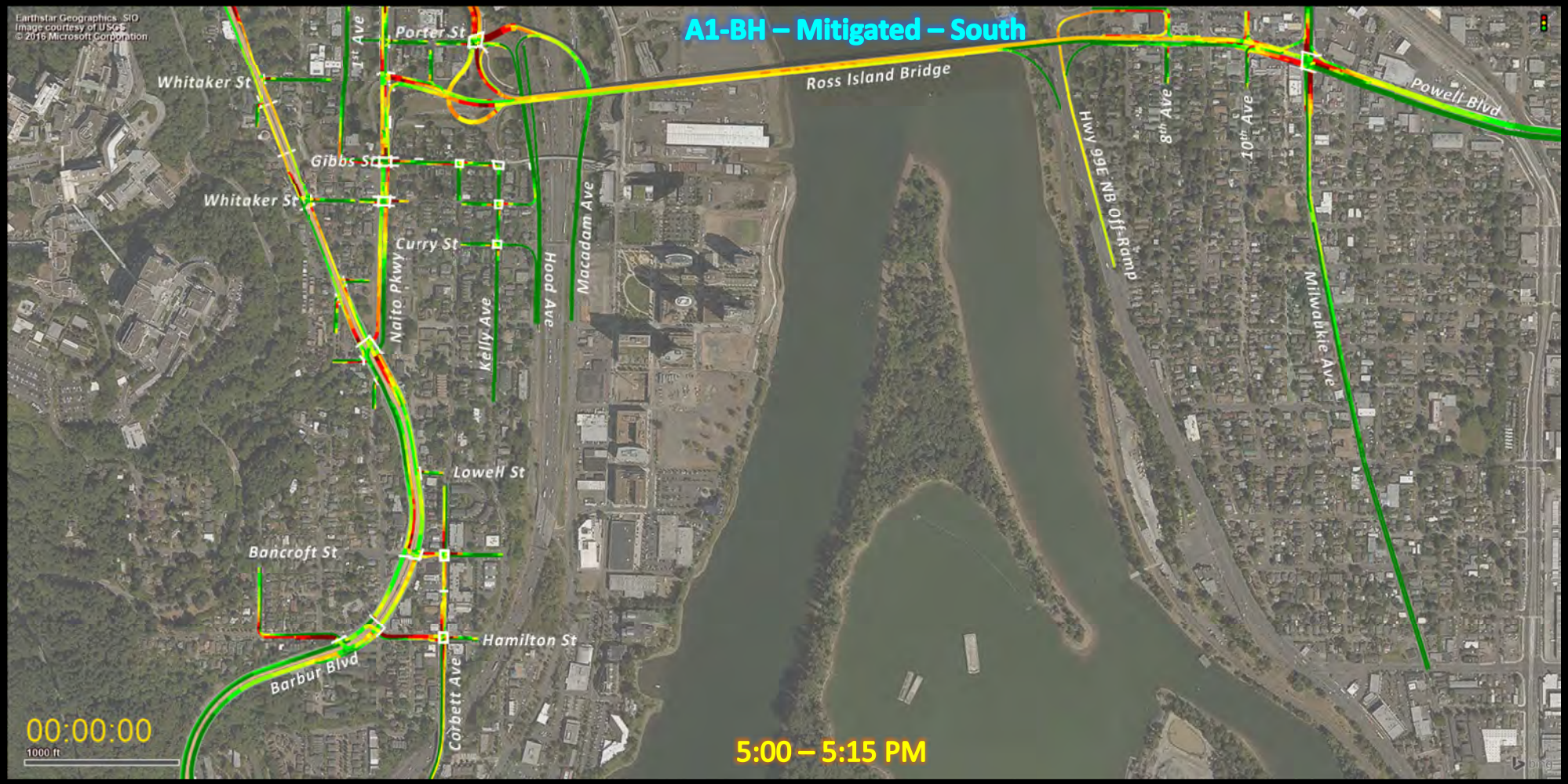
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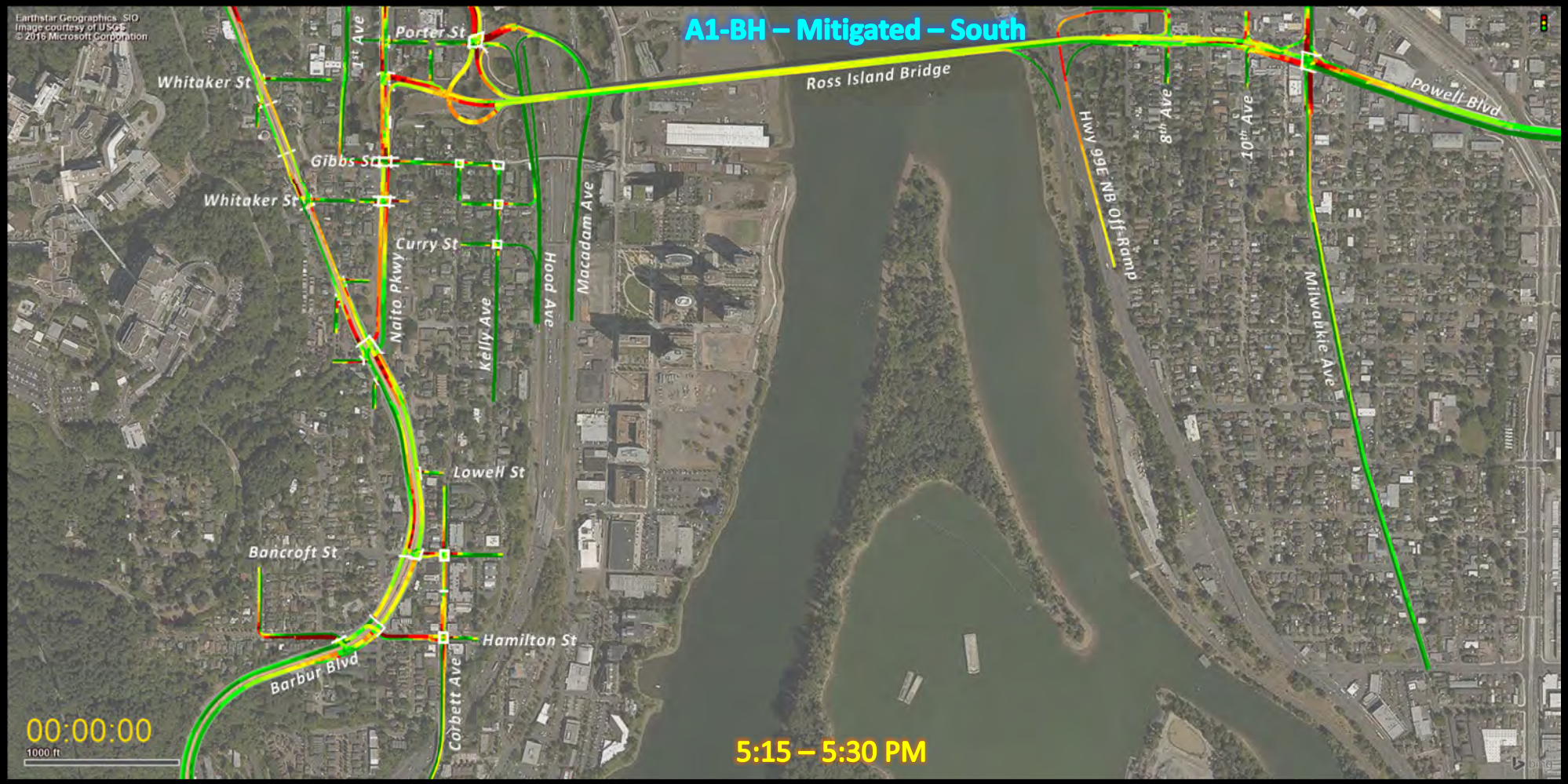
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A1-BH – Mitigated – South
Earthstar Geographics SIO
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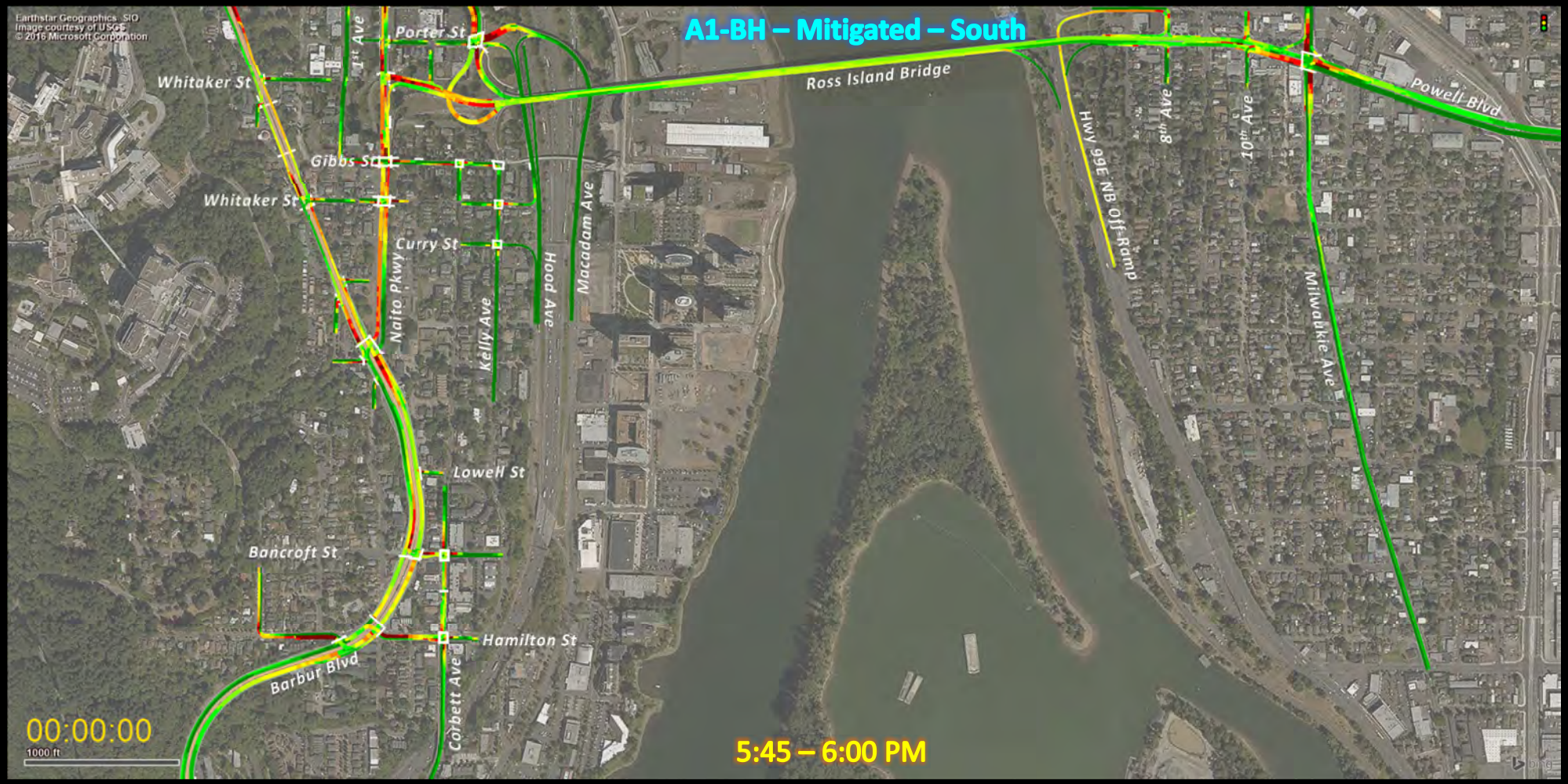
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Earthstar Geographics SIO
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Appendix II

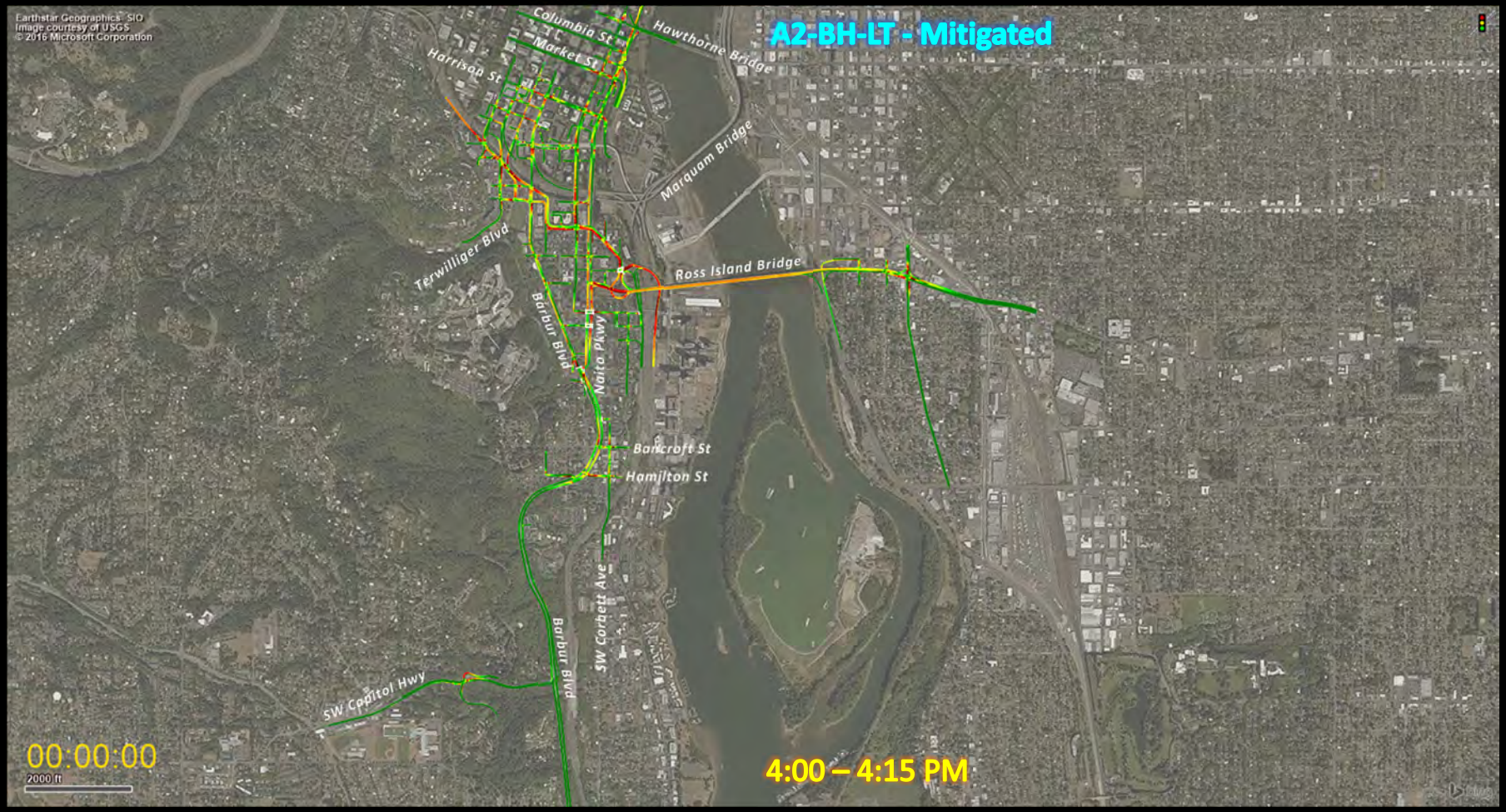
Mitigated Alternative A2-BH-LT Vissim Model Queue Plots

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Alternative A2-BH-LT – Mitigated: Full Study Area

Naito Alignment +Left Turn + Bridgehead & Mitigations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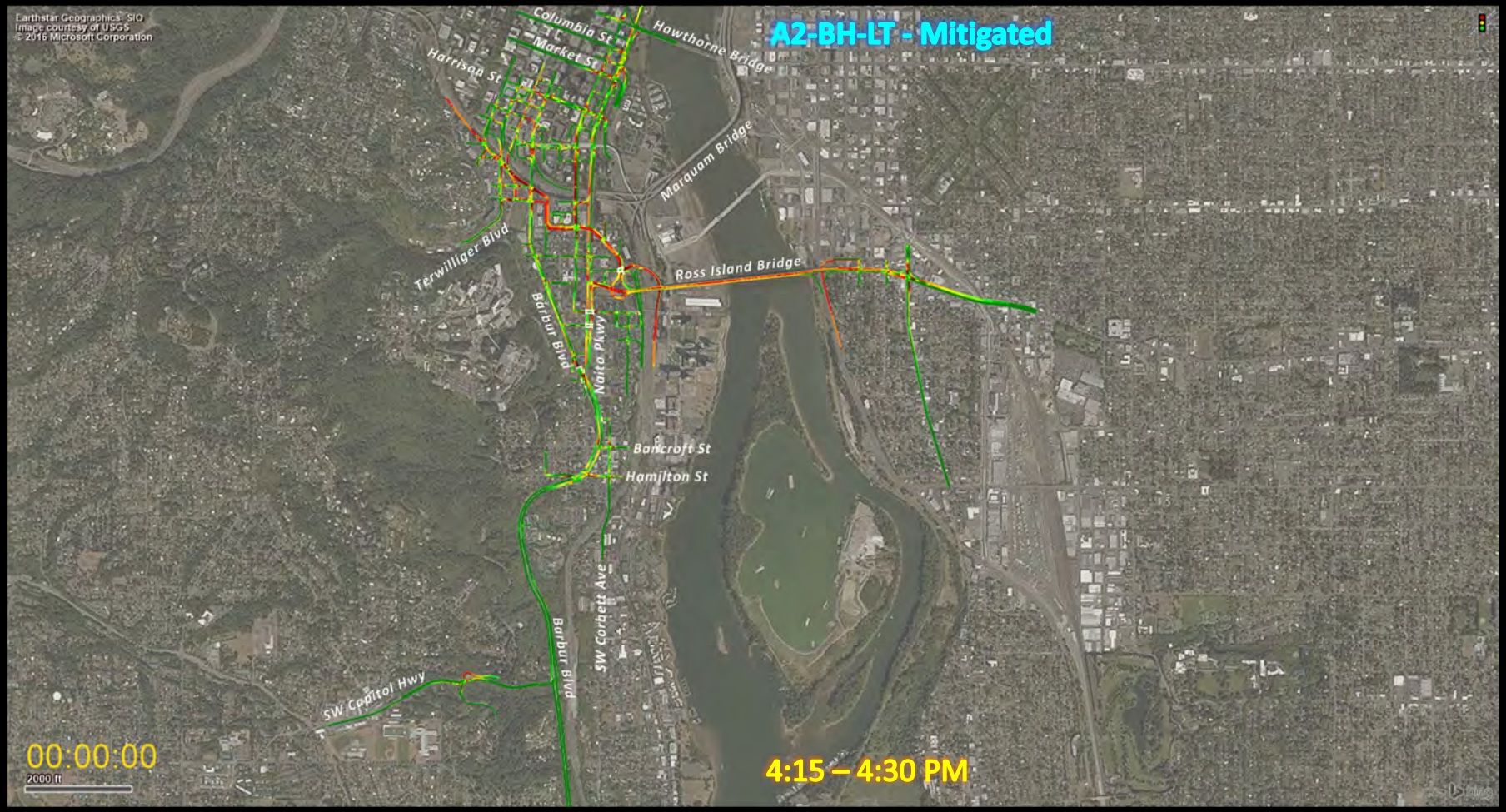
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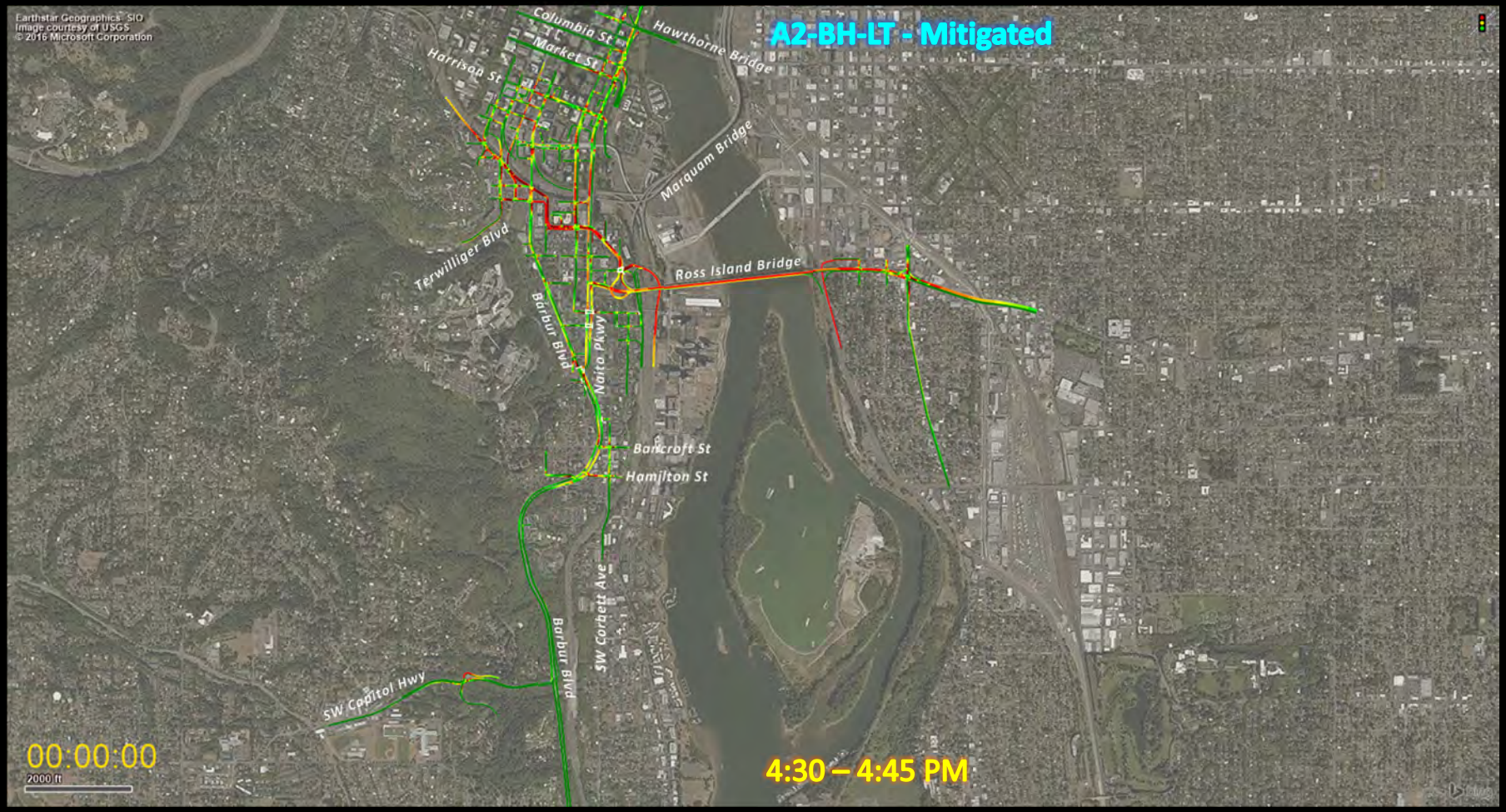
A2-BH-LT - Mitigated
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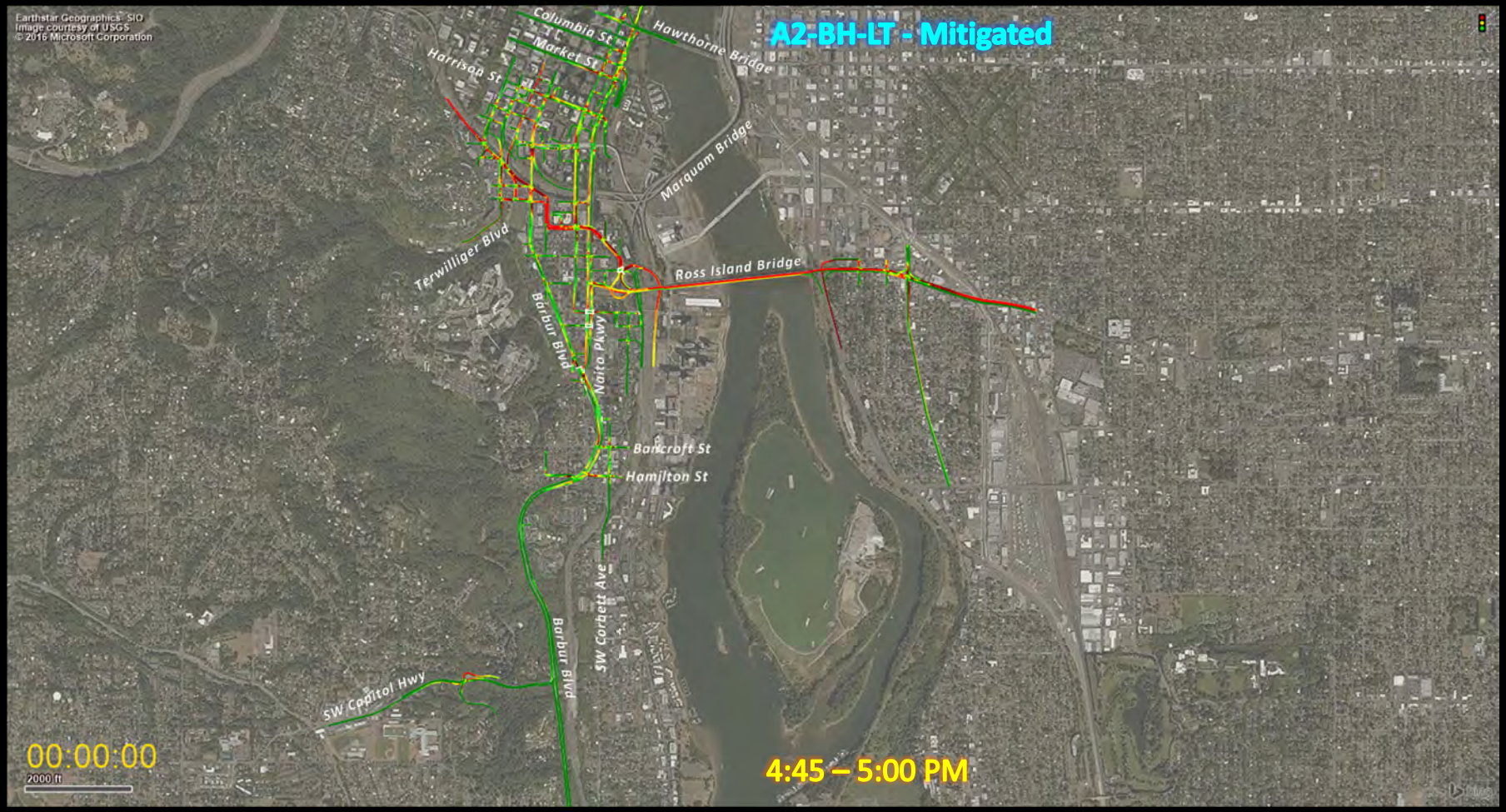
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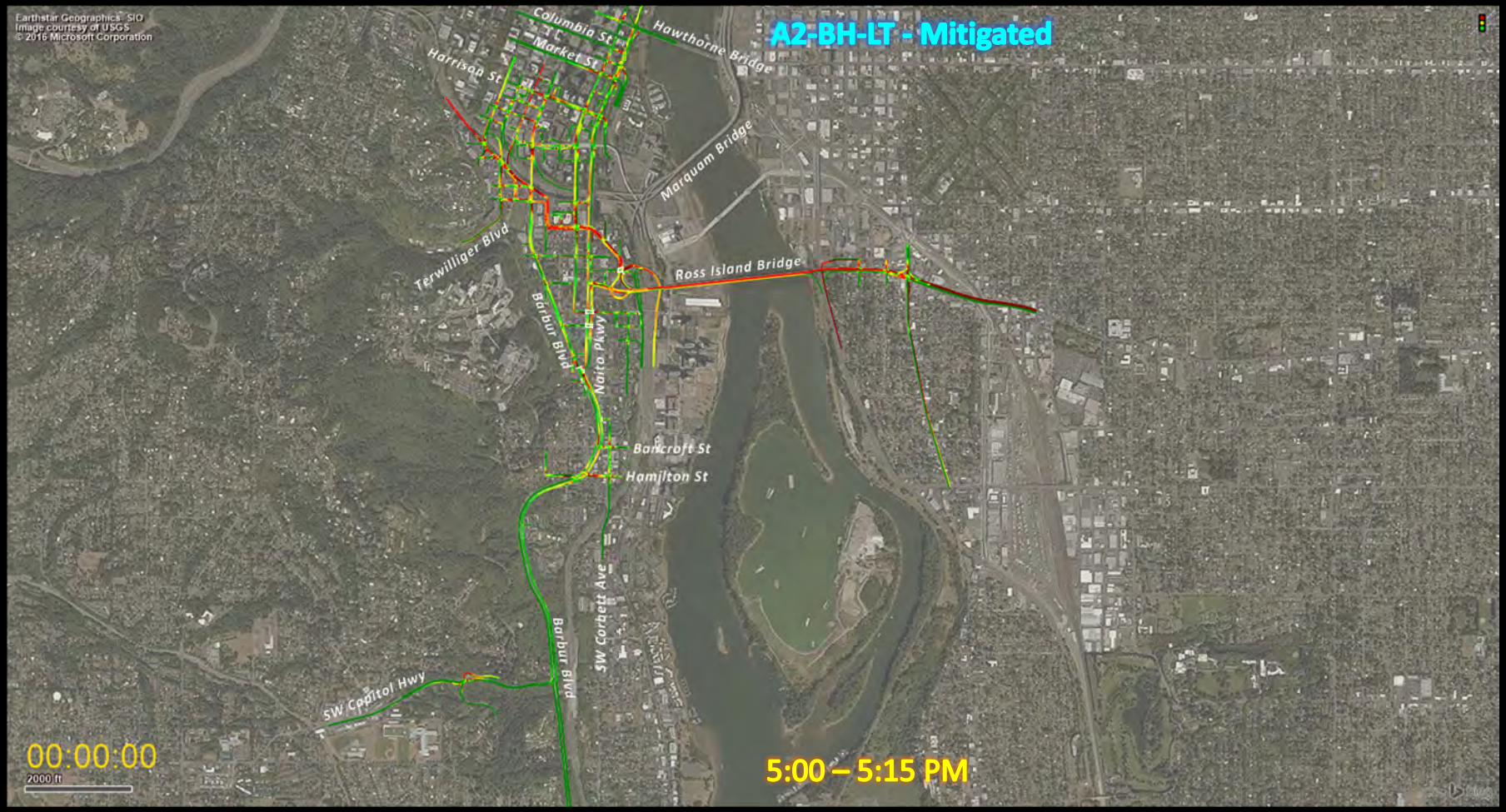
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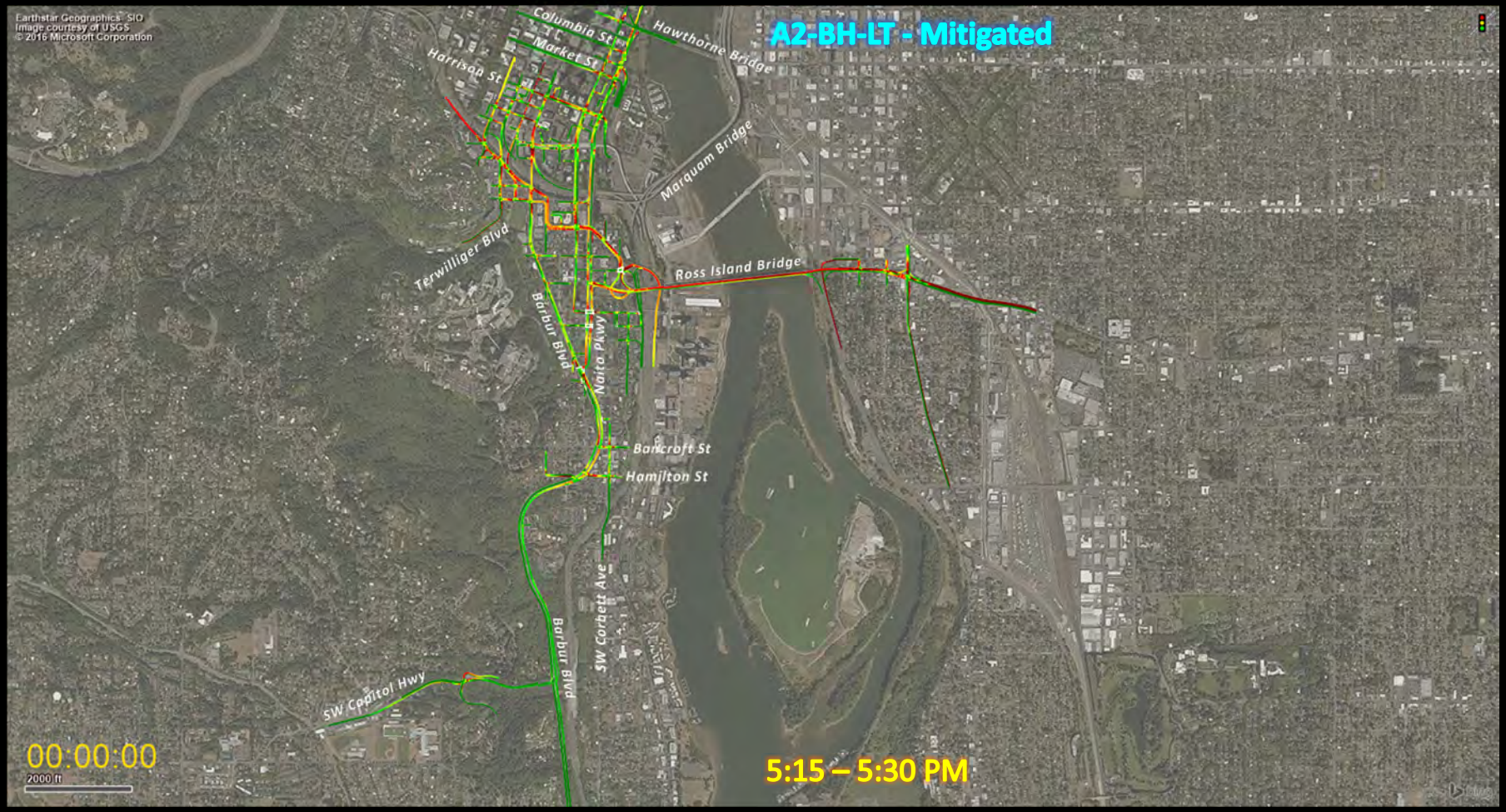
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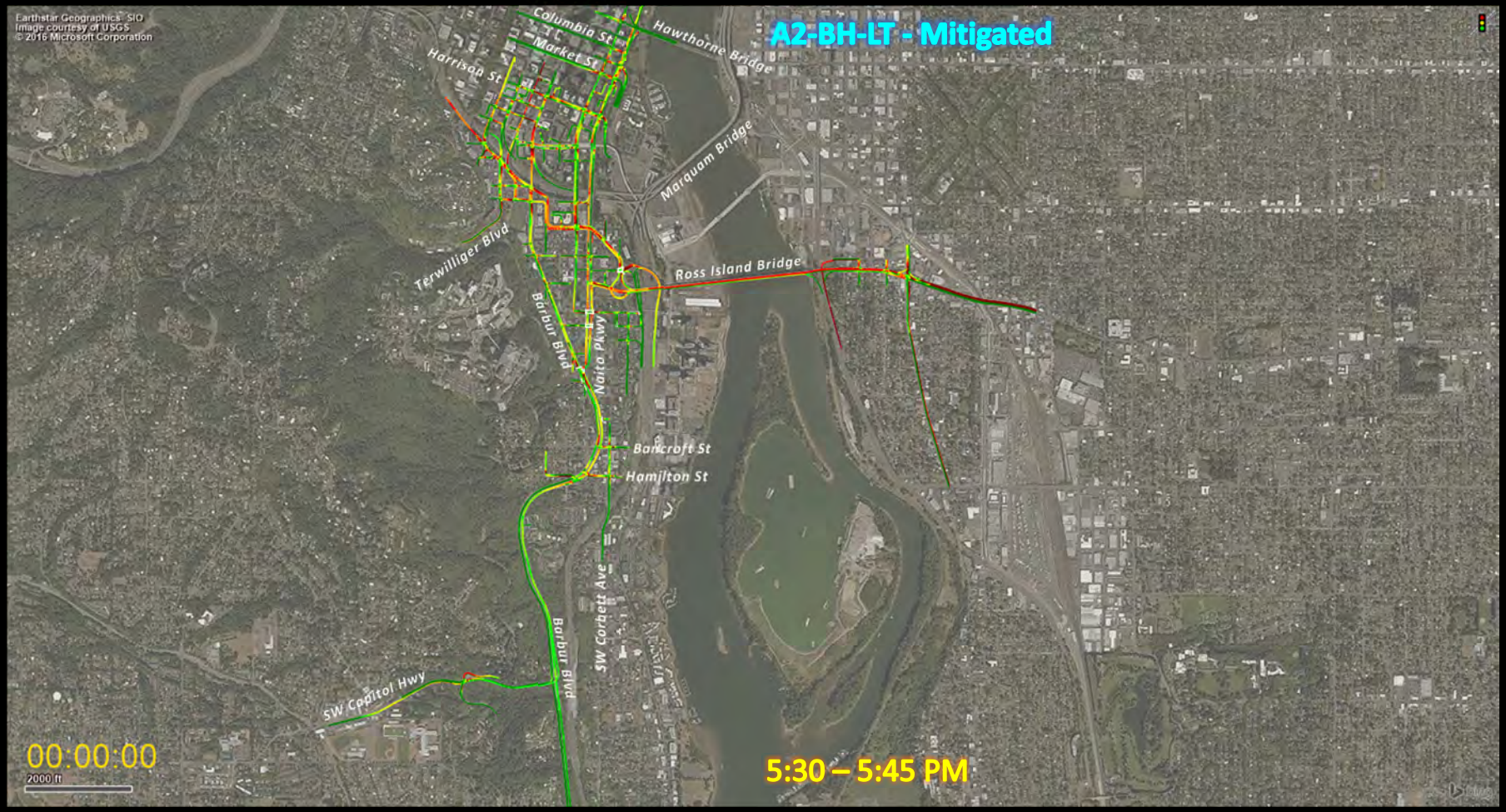
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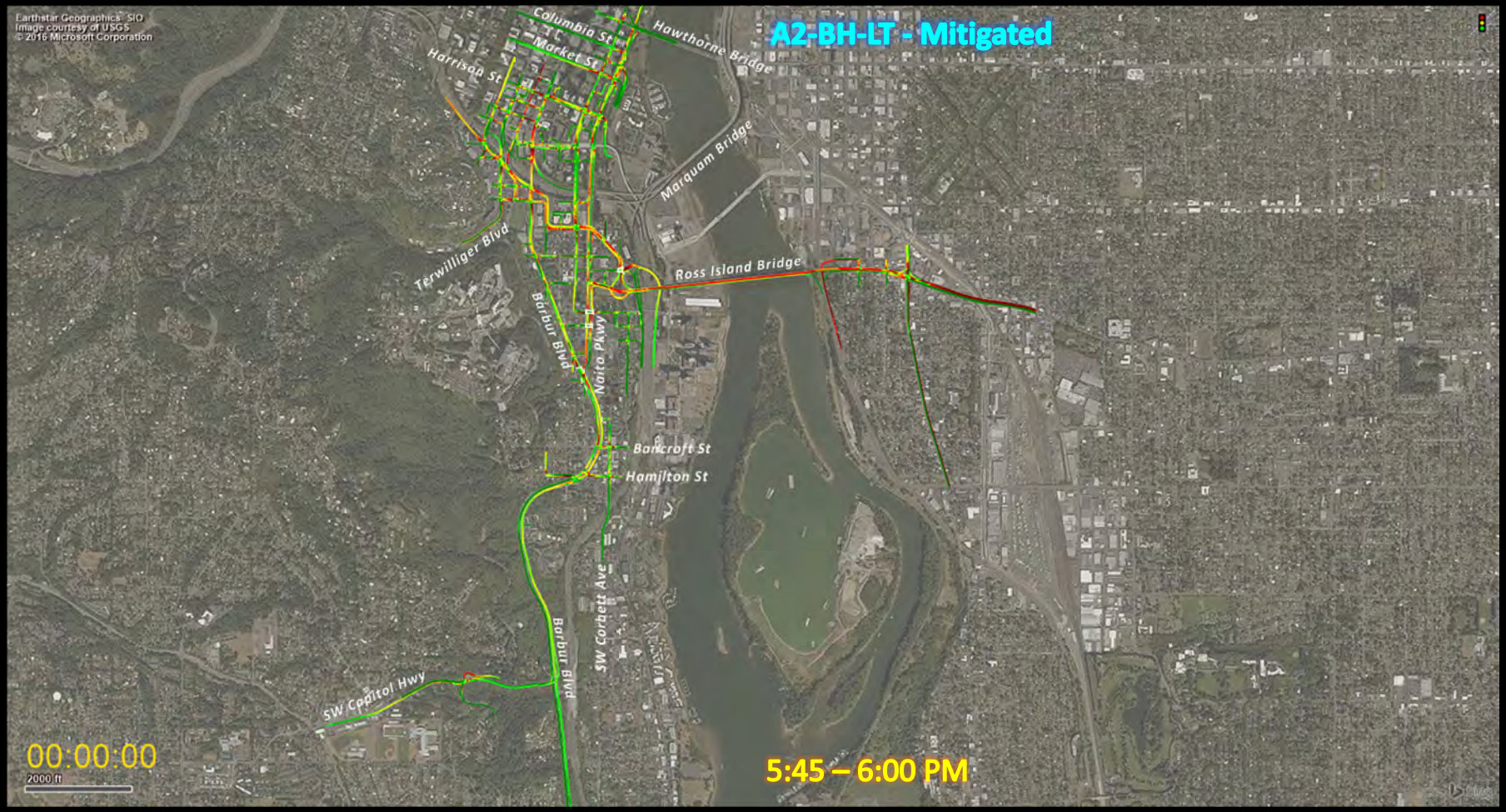
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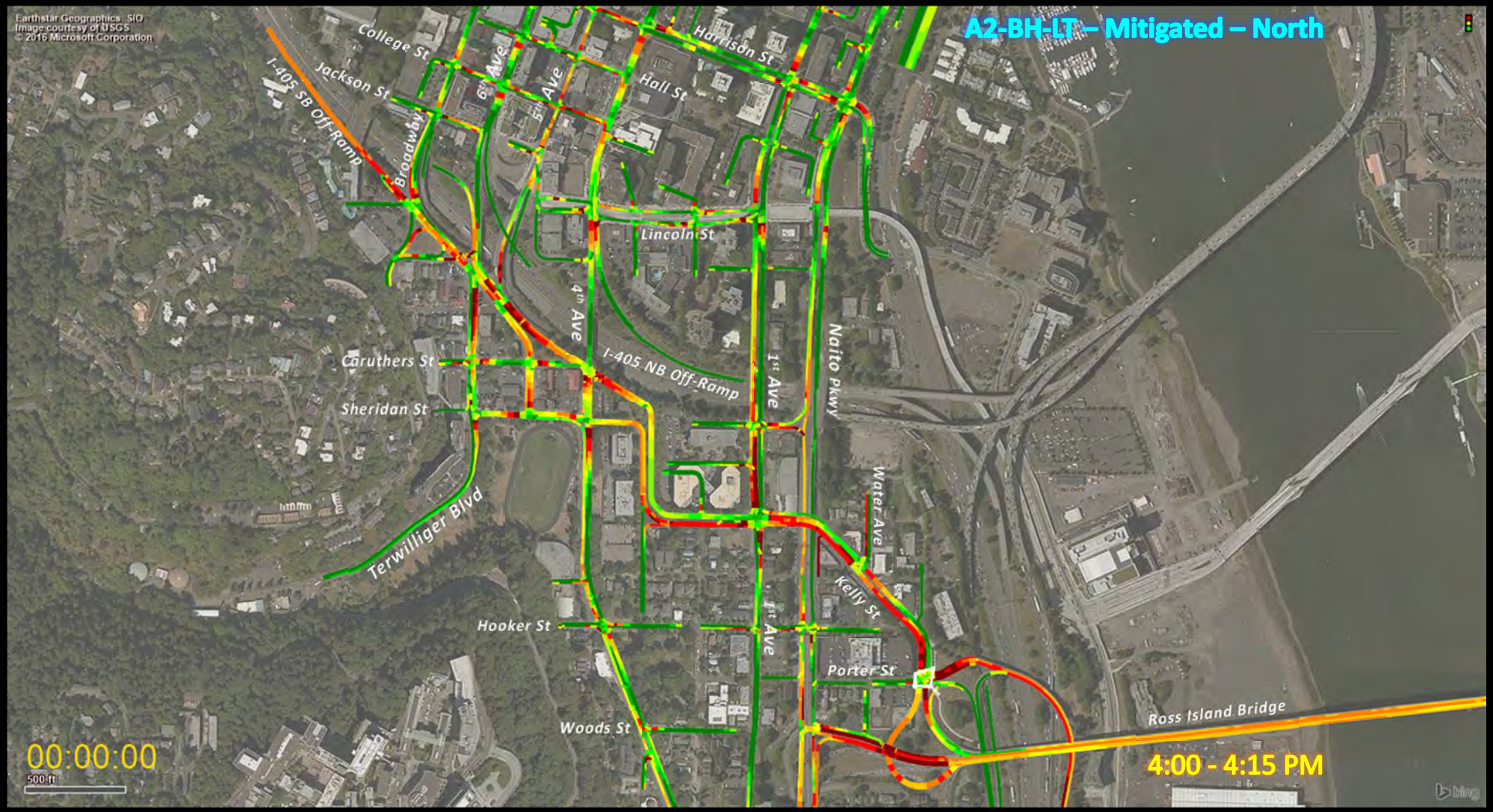
Alternative A2-BH-LT – Mitigated: North

Naito Alignment +Left Turn + Bridgehead & Mitigations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Earthstar Geographics, SIO
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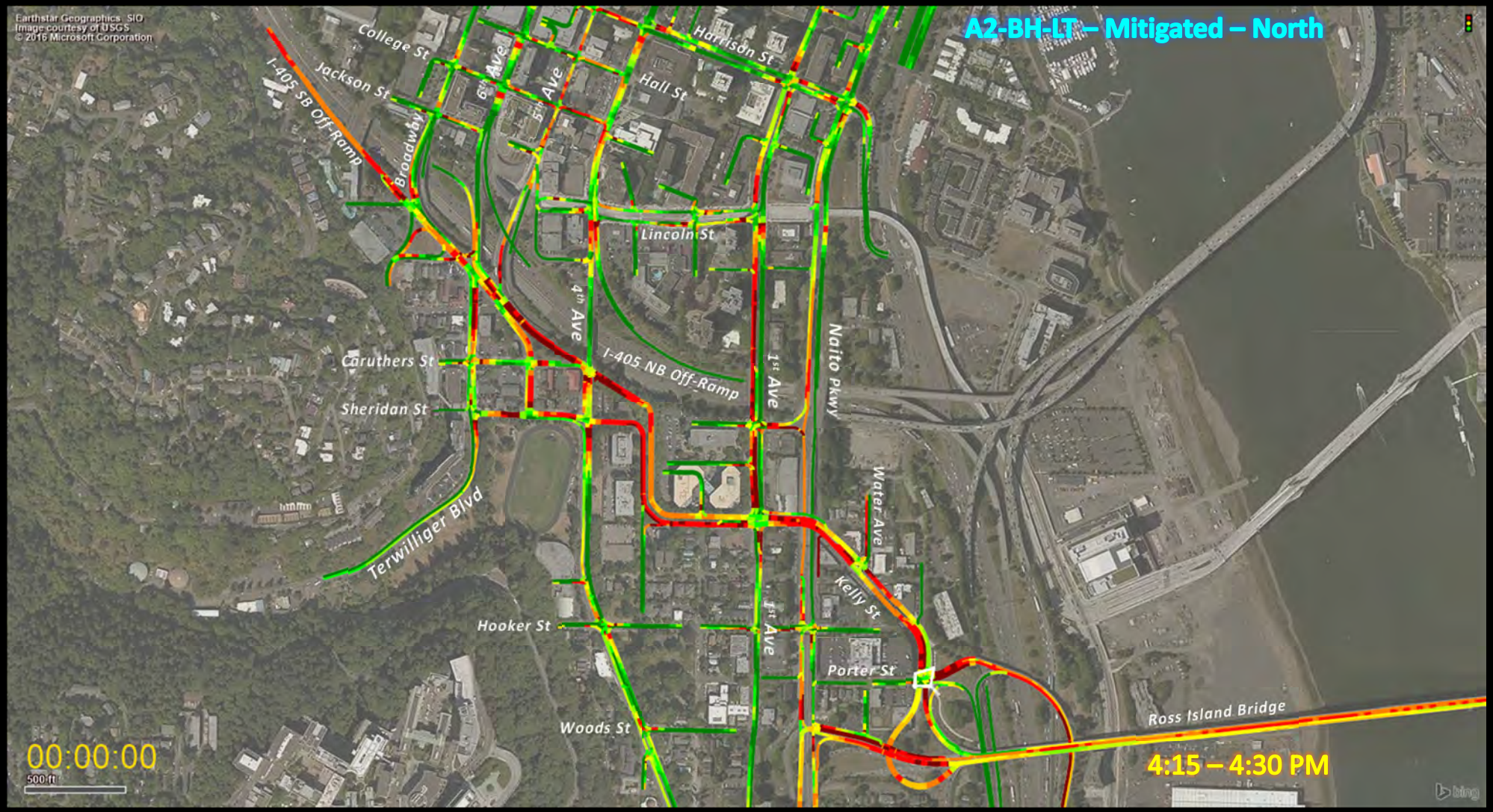
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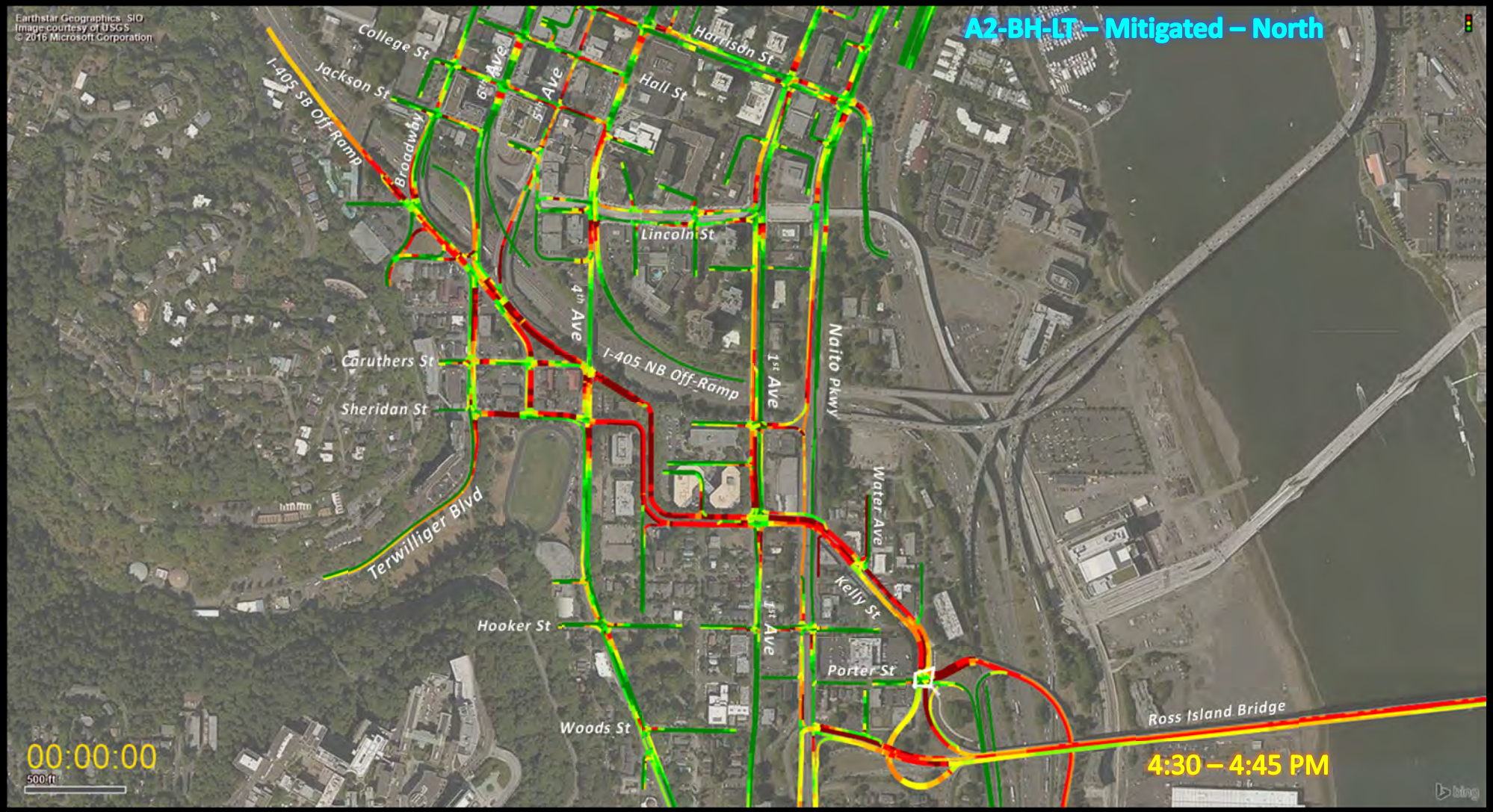
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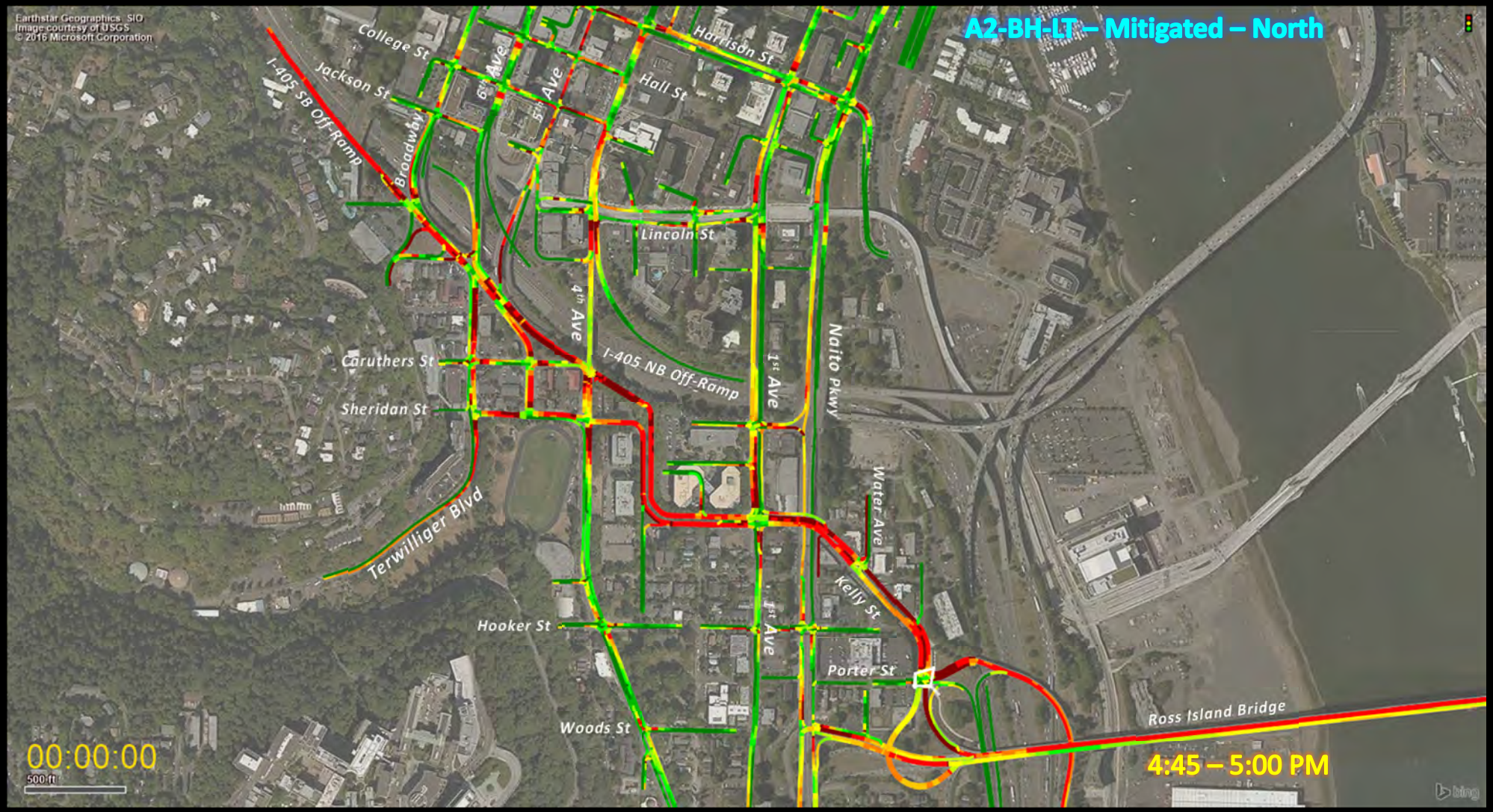
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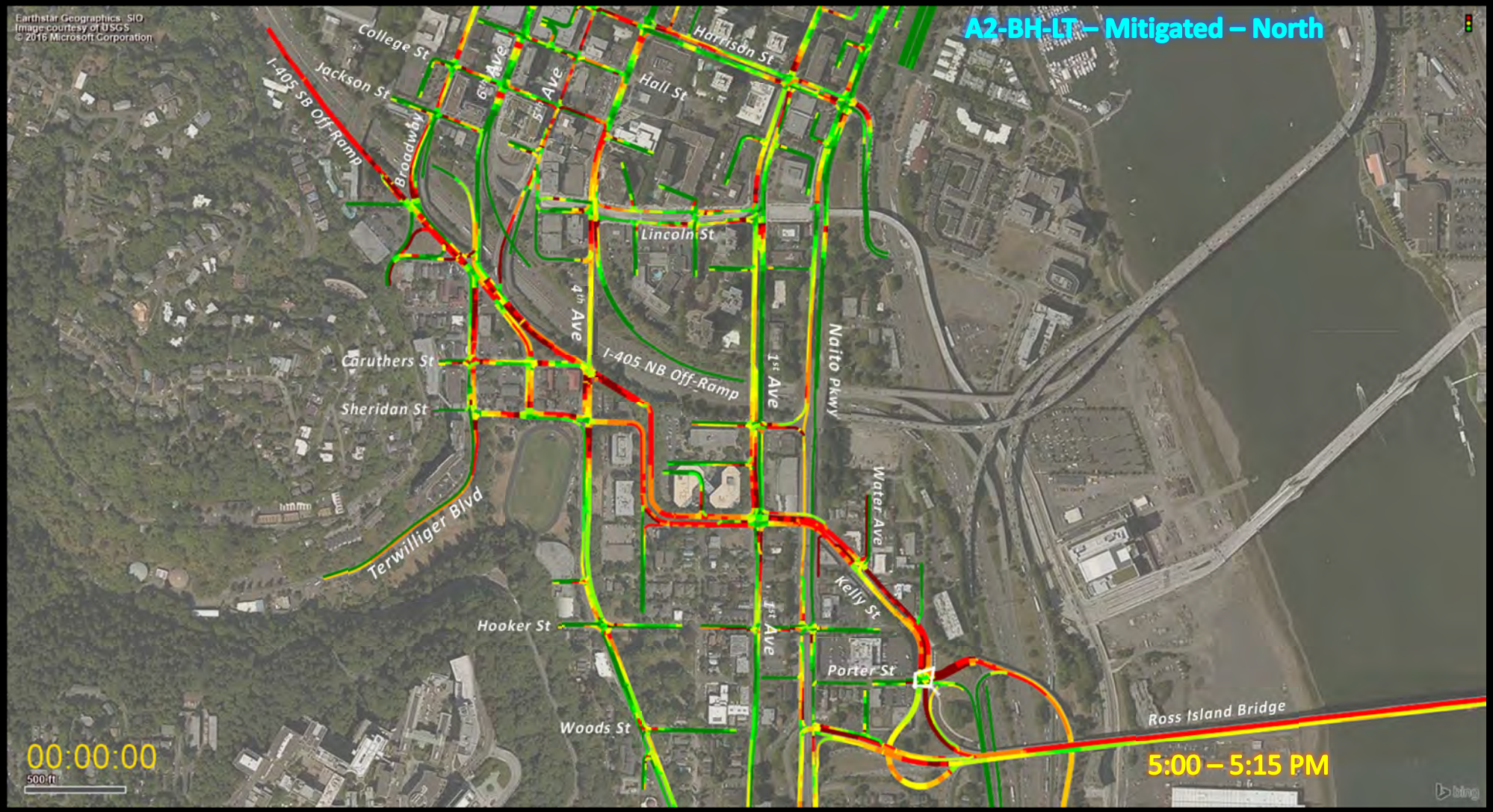
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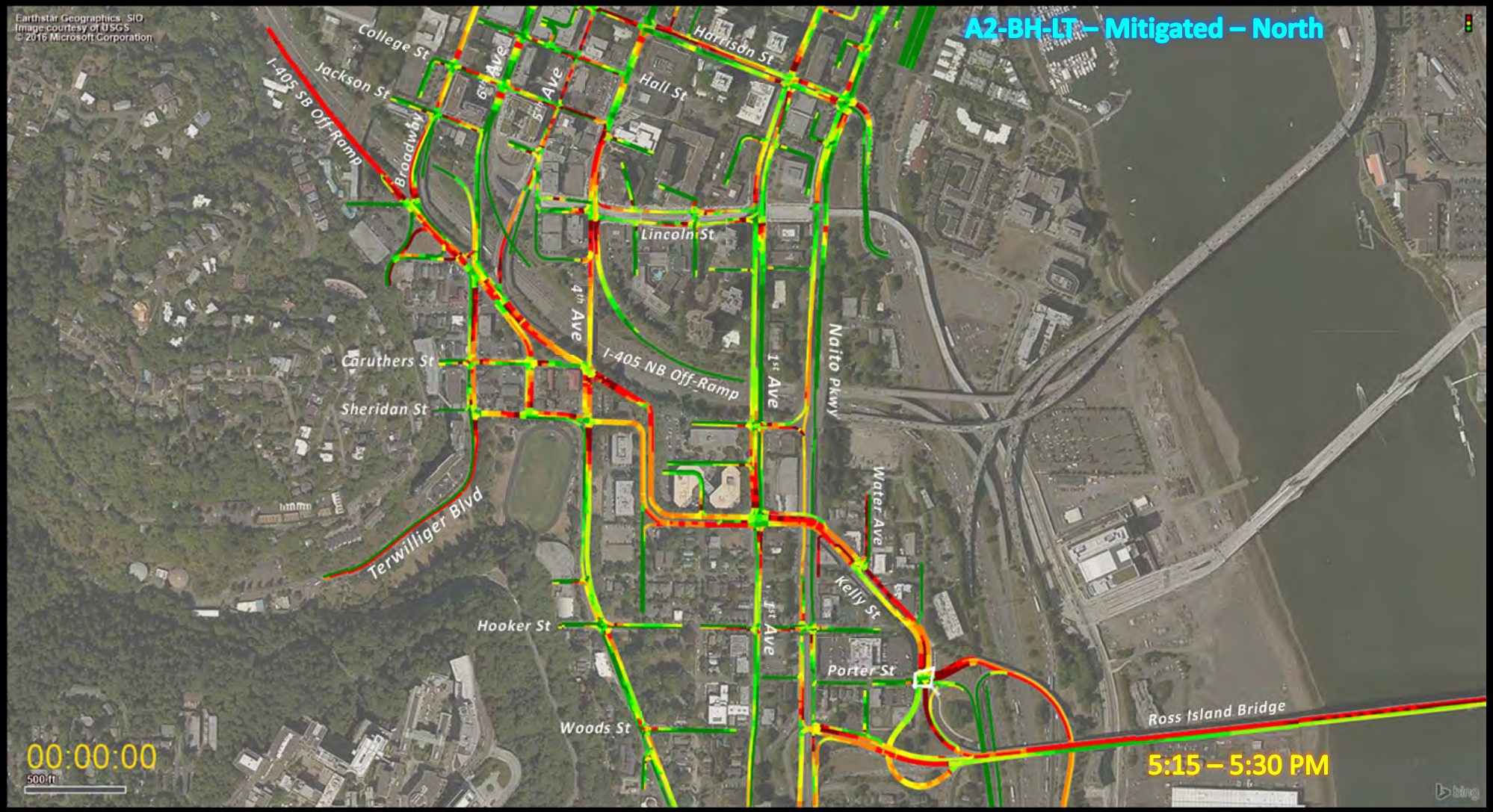
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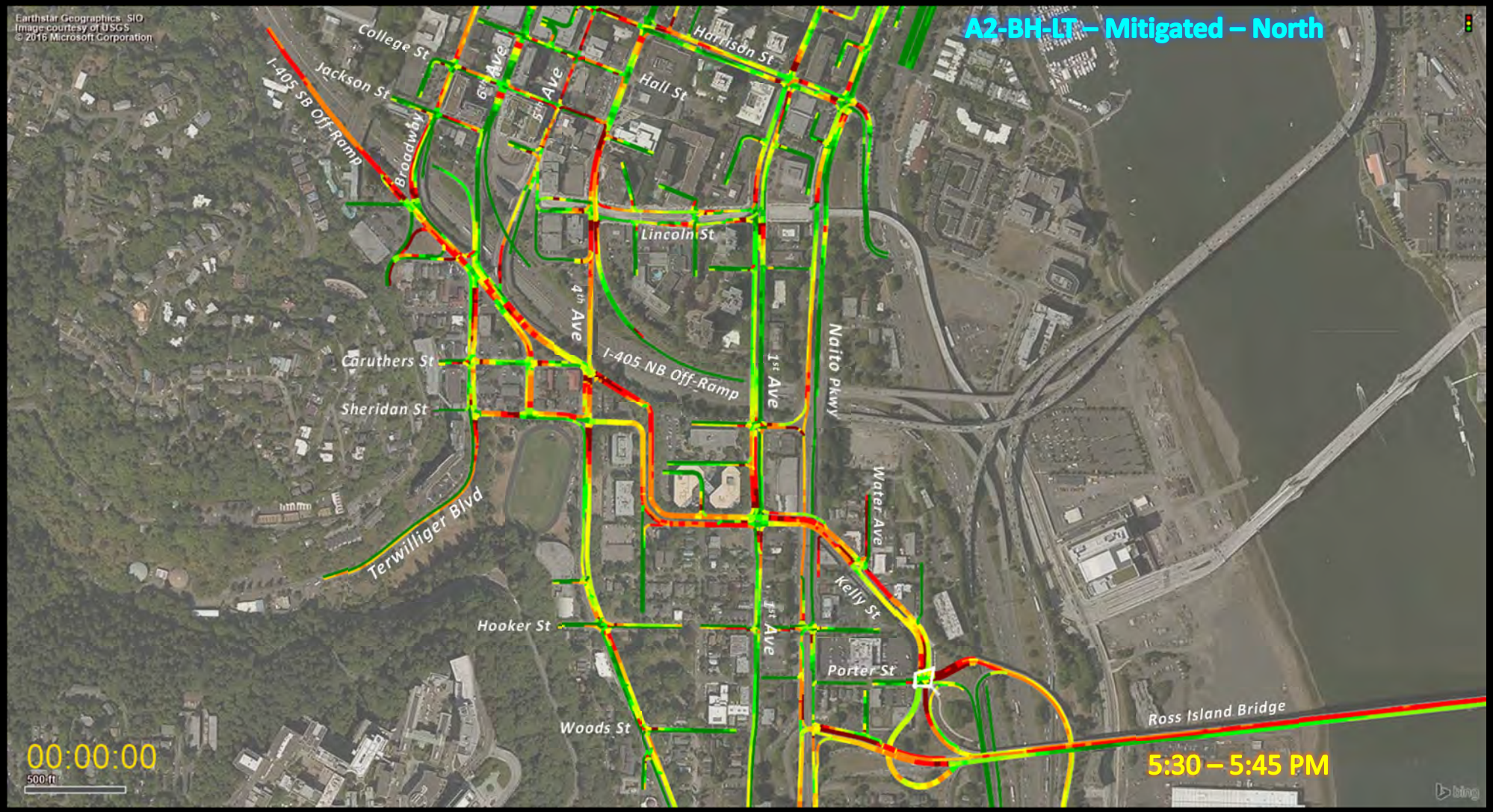
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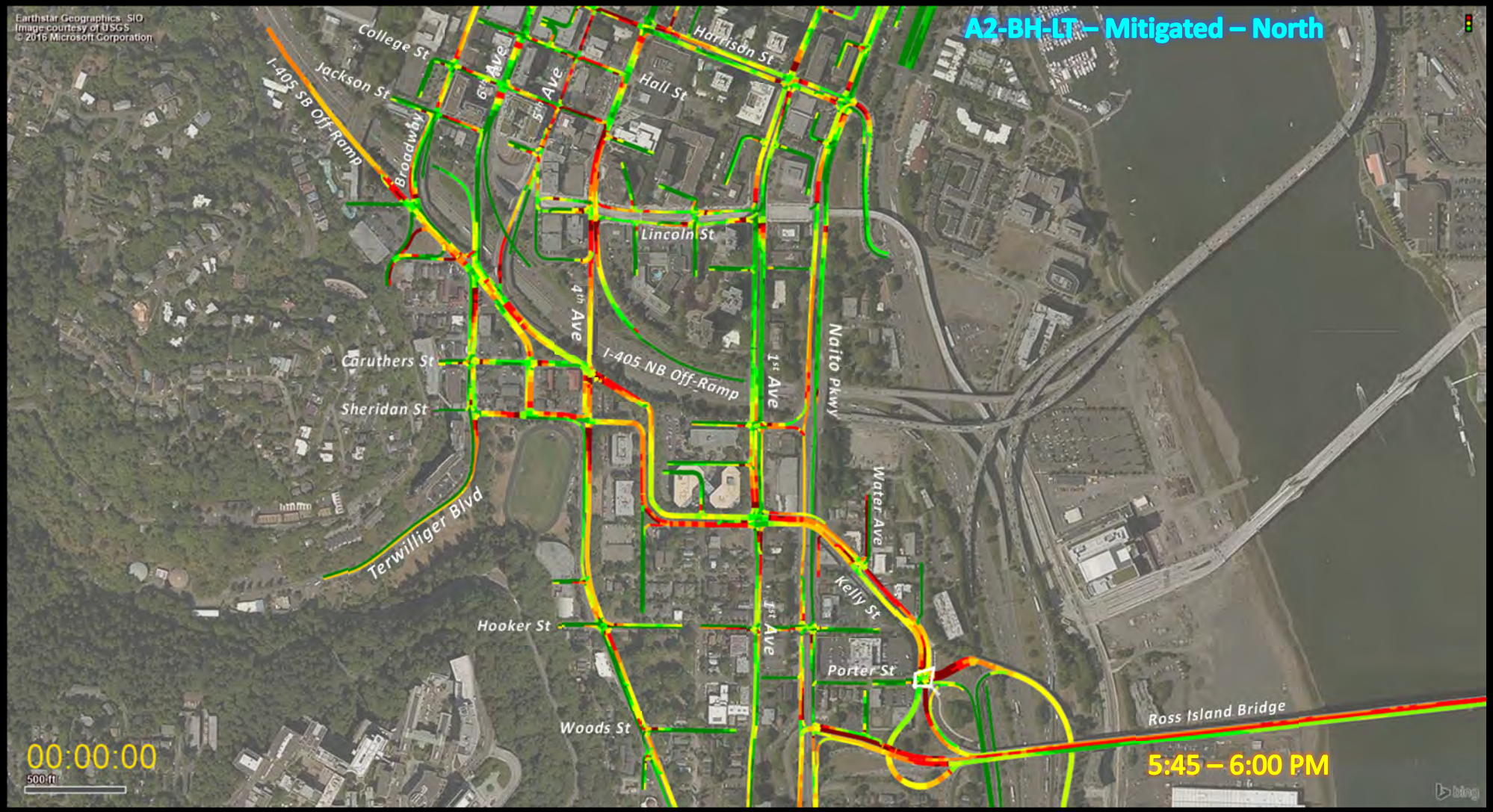
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Alternative A2-BH-LT – Mitigated: South

Naito Alignment +Left Turn + Bridgehead & Mitigations

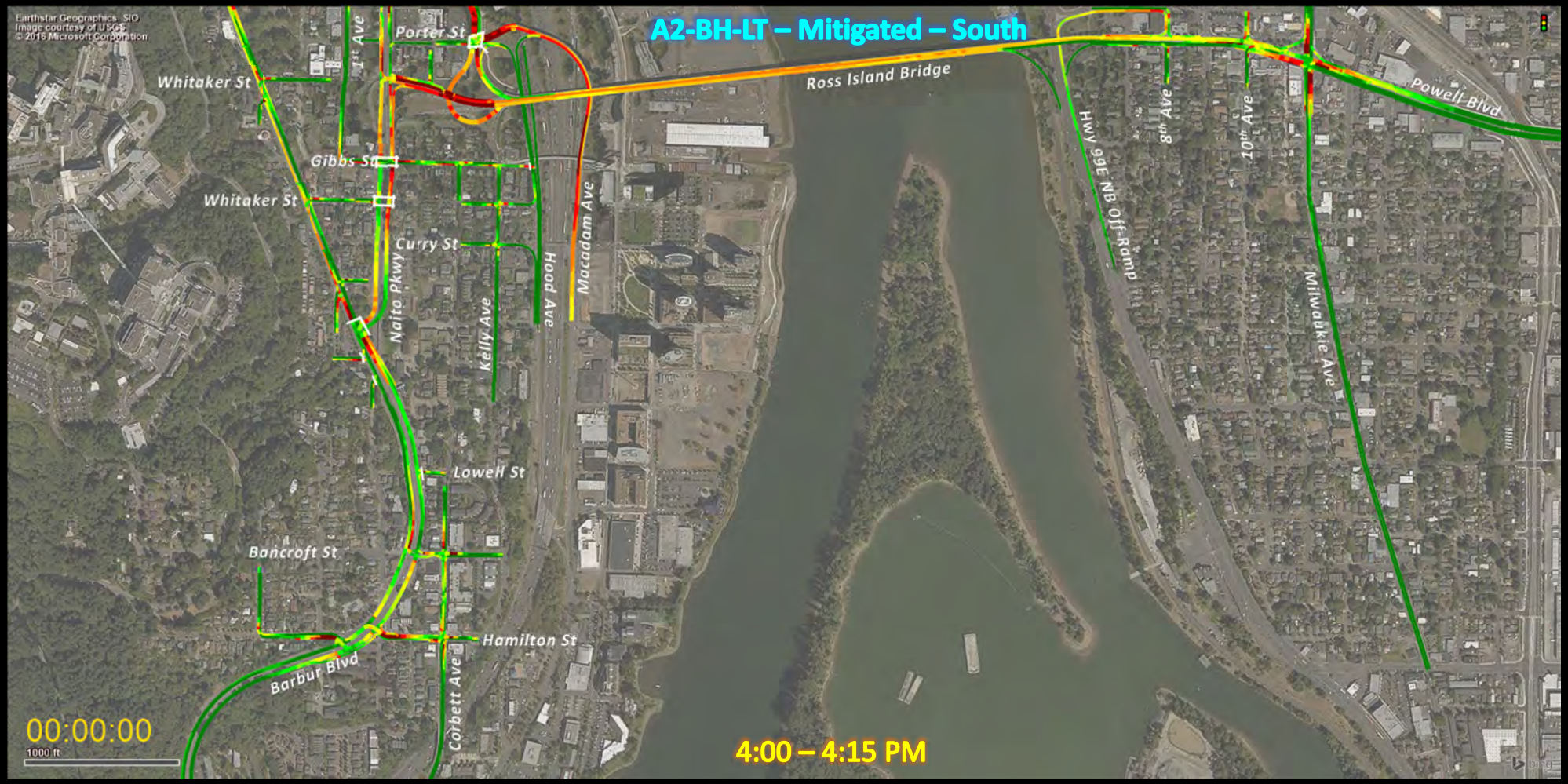
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Image courtesy of USGS
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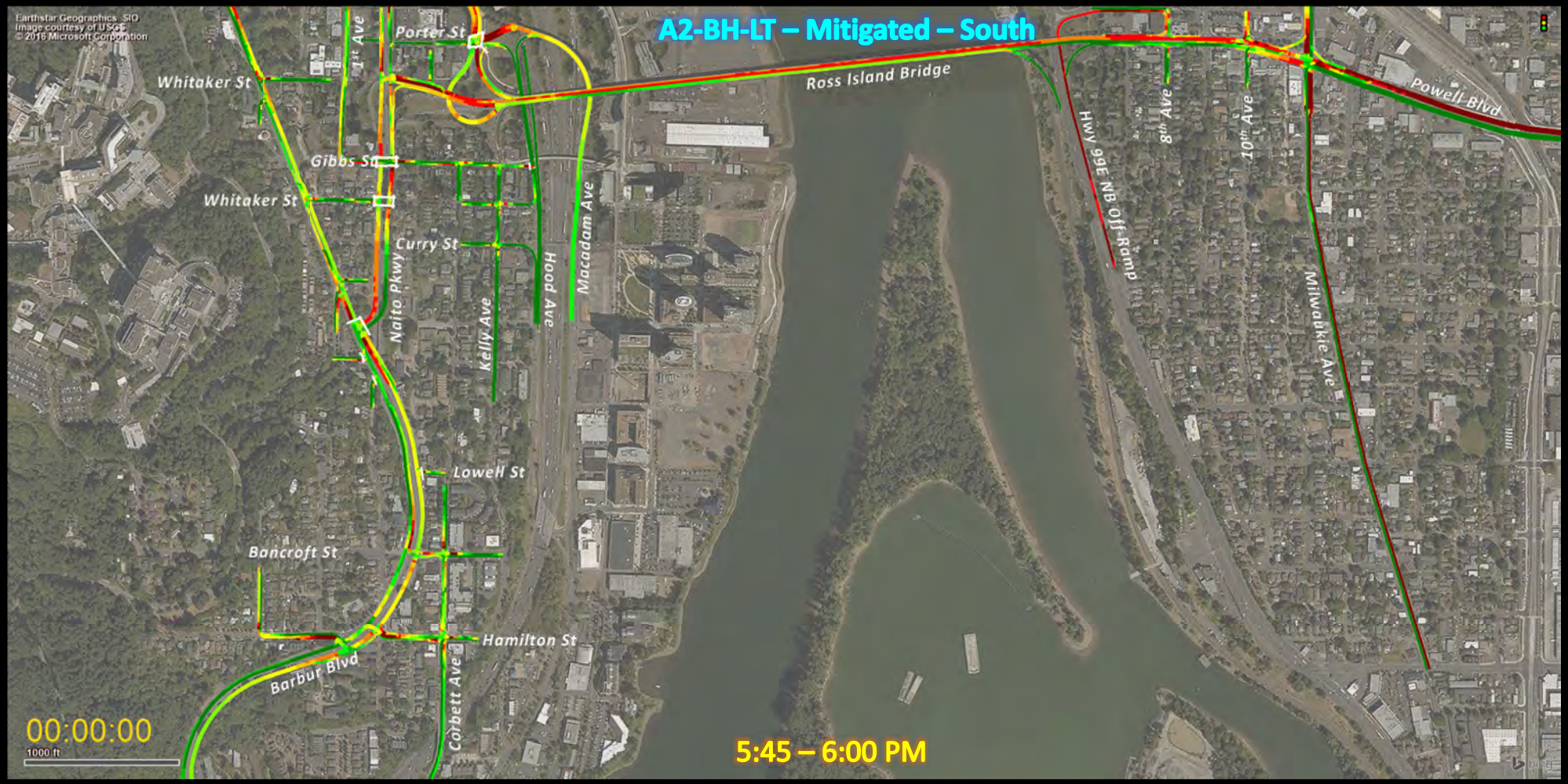
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Appendix JJ

Mitigated Alternative A1 Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Mitigated A1 PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8806	12:48	2:50	6:10	24:06	8	10	9:23
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9673	21:57	4:17	11:56	44:25	5	6	18:32
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8014	8:21	1:12	6:04	17:51	11	12	5:14
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	10019	12:13	5:19	4:12	44:25	9	14	9:03
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	7210	22:26	6:37	5:41	40:31	4	5	19:14
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	8023	6:27	2:03	3:42	14:11	14	18	3:43
Barbur Blvd/Capitol Hwy	6th Ave/College St	11410	12:29	2:44	9:22	19:15	10	12	8:16
5th Ave/College St	Barbur Blvd/Capitol Hwy	11235	9:08	3:13	4:52	20:41	14	18	4:36
5th Ave/College St	Lincoln St east of Naito Pkwy	2024	3:37	0:17	3:18	5:01	6	7	0:47
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	2:32	0:13	2:11	3:13	11	12	0:31
Barbur Blvd/Capitol Hwy	6th Ave/College St	11466	6:49	0:18	6:13	7:38	19	20	1:36
5th Ave/College St	Barbur Blvd/Capitol Hwy	11239	6:31	0:21	5:52	7:52	20	21	1:16
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5682	10:58	6:04	2:22	41:33	6	12	9:14
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3992	13:25	5:08	1:53	23:05	3	7	11:44
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7155	26:25	16:55	4:01	18:24	3	6	24:11

Appendix KK

Mitigated Alternative A2-BH Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Mitigated A2-BH PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8516	13:03	2:13	7:18	20:39	7	9	9:46
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9706	26:14	7:22	9:21	50:06	4	6	22:47
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8255	5:14	0:45	2:58	7:53	18	21	2:30
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	9977	14:08	6:01	3:55	35:09	8	14	10:57
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	6475	4:44	0:59	2:32	10:02	16	19	2:35
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	8058	11:18	4:53	4:45	28:55	8	12	8:23
Barbur Blvd/Capitol Hwy	6th Ave/College St	11408	9:23	1:12	7:13	12:55	14	16	5:05
5th Ave/College St	Barbur Blvd/Capitol Hwy	11300	9:47	2:10	4:59	21:10	13	16	5:22
5th Ave/College St	Lincoln St east of Naito Pkwy	2024	3:14	0:24	2:49	4:32	7	8	1:04
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	3:09	0:17	2:47	4:08	9	11	0:42
Barbur Blvd/Capitol Hwy	6th Ave/College St	12368	9:05	1:00	7:42	14:50	15	18	2:25
5th Ave/College St	Barbur Blvd/Capitol Hwy	12140	8:13	0:25	7:23	9:37	17	18	1:51
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5708	14:37	6:41	1:54	37:38	4	10	12:53
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3998	14:51	3:37	5:35	27:12	3	4	13:07
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7124	13:13	6:11	2:09	36:32	6	14	10:58

Appendix LL

Mitigated Alternative A2-LA Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Mitigated A2-LA PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8799	5:09	1:23	3:27	18:59	19	26	1:45
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9672	13:58	6:45	4:17	52:08	8	12	10:29
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8013	4:45	2:40	2:38	37:04	19	26	2:07
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	9988	9:26	5:48	3:14	41:09	12	20	6:18
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	7213	6:23	3:46	2:31	29:09	13	21	3:49
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	8021	5:55	4:20	3:04	27:11	15	24	3:12
Barbur Blvd/Capitol Hwy	6th Ave/College St	11416	22:56	11:59	9:12	43:48	6	10	18:45
5th Ave/College St	Barbur Blvd/Capitol Hwy	11268	7:49	2:56	4:34	23:31	16	23	3:28
5th Ave/College St	Lincoln St east of Naito Pkwy	2039	3:13	0:22	2:46	4:07	7	9	1:01
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	3:07	0:17	2:47	4:11	9	12	0:39
Barbur Blvd/Capitol Hwy	6th Ave/College St	12366	8:46	0:38	7:55	12:26	16	21	2:06
5th Ave/College St	Barbur Blvd/Capitol Hwy	12139	7:57	0:17	7:12	8:35	17	23	1:29
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5682	4:52	5:44	1:30	40:26	13	25	3:08
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3990	8:49	3:24	2:36	38:36	5	8	7:06
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7155	6:16	6:41	2:02	41:51	13	25	4:02

Appendix MM

Mitigated Alternative A1-BH Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Mitigated A1-BH PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8519	12:58	1:57	7:12	19:13	7	9	9:41
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9711	18:05	4:59	7:54	35:51	6	8	14:36
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8234	5:54	0:53	3:31	9:27	16	18	3:10
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	9947	7:36	3:01	3:48	20:53	15	20	4:26
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	6482	6:00	1:36	3:06	11:37	12	16	3:51
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	8098	13:18	4:02	5:21	30:31	7	9	10:22
Barbur Blvd/Capitol Hwy	6th Ave/College St	11412	13:15	2:26	7:59	18:55	10	12	8:58
5th Ave/College St	Barbur Blvd/Capitol Hwy	11237	9:12	2:16	5:08	22:56	14	17	4:52
5th Ave/College St	Lincoln St east of Naito Pkwy	2024	3:00	0:10	2:42	3:24	8	8	0:50
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	3:09	0:34	2:46	5:19	9	10	0:42
Barbur Blvd/Capitol Hwy	6th Ave/College St	11464	6:36	0:29	5:59	8:20	20	21	1:25
5th Ave/College St	Barbur Blvd/Capitol Hwy	11239	6:15	0:13	5:53	6:52	20	21	1:13
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5715	5:28	3:57	1:39	22:29	12	22	3:43
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3996	12:44	3:23	5:09	25:07	4	5	11:00
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7132	5:07	3:29	2:03	19:39	16	26	2:51

Appendix NN

Mitigated Alternative A2-BH-LT Vissim Model Travel Time Data

Metro SW Corridor DEIS- Segment A - PM model

Future Build Vissim Model Results Memorandum

Mitigated A2-BH-LT PM Peak Hour (4:30 - 5:30 PM)			Travel Time (Sec)				Model Average Speed (mph)	Model 85th Percentile (mph)	Model Average Delay (min)
From	To	Distance (ft)	10-Run Average	Standard Deviation	Min	Max			
I-405 SB Exit Ramp @ Broadway	Hwy 99E on Powell Blvd	8514	13:43	2:42	4:28	23:24	7	9	10:27
Powell Blvd/Milwaukie Ave	I-405 NB Entrance Ramp @ SW 6th	9706	25:34	6:29	12:38	49:21	4	6	22:08
Barbur Blvd/Hamilton Street	Hwy 99E on Powell Blvd	8265	6:20	1:32	2:59	15:45	15	19	3:35
Powell Blvd/Milwaukie Ave	Barbur Blvd/Hamilton Street	9974	15:31	5:00	7:56	36:23	7	10	12:21
Macadam Ave/Curry St	Hwy 99E on Powell Blvd	6473	7:56	1:49	3:27	16:57	9	13	5:48
Naito Pkwy/Harrison St	Hwy 99E on Powell Blvd	7555	7:52	1:54	2:48	17:26	11	15	5:23
Barbur Blvd/Capitol Hwy	6th Ave/College St	11264	11:18	7:02	6:06	33:28	11	16	7:05
5th Ave/College St	Barbur Blvd/Capitol Hwy	11335	10:18	2:53	5:23	27:17	13	17	5:53
5th Ave/College St	Lincoln St east of Naito Pkwy	2024	3:12	0:20	2:50	4:08	7	9	1:01
Lincoln St east of Naito Pkwy	6th Ave/College St	2548	3:03	0:11	2:48	3:40	10	11	0:36
Barbur Blvd/Capitol Hwy	6th Ave/College St	12368	8:39	0:33	7:43	10:03	16	20	2:00
5th Ave/College St	Barbur Blvd/Capitol Hwy	12174	8:03	0:22	7:25	9:05	17	21	1:37
Powell Blvd/Milwaukie Ave	Kelly Ave/Porter St	5709	14:18	6:50	3:34	36:01	5	7	12:34
Kelly Ave/Porter St	I-405 NB Entrance Ramp @ SW 6th	3998	13:33	4:05	4:19	30:19	3	5	11:49
Powell Blvd/Milwaukie Ave	Hood Ave/Curry St	7124	12:23	5:56	4:10	33:14	7	10	10:07

MEMORANDUM

DATE: November 22, 2017

TO: Metro
Portland, Oregon

FROM: Randy Johnson, PE, PTOE
DKS Associates
Aaron Berger, PE (WA)
DKS Associates

SUBJECT: Metro SW Corridor DEIS- Segment A– AM Model Future Build Vissim Model Results Memorandum P# 17017-000

This memorandum documents the development of the future Build year 2035 weekday AM period Vissim microsimulation models for the Metro SW Corridor DEIS project- Segment A. This memorandum also documents the performance measures reported by the future Build year Vissim models. The Methods and Assumptions memorandum[1] documented the details of model development that were assumed going into this task. This memorandum documents additional assumptions made and parameters that were changed during modeling.

Project Description

The project evaluates the transportation impacts associated with the Future No-Build, and Future Build alternatives for 2035. Because the study area is so large and sometimes spans between different jurisdictions, this project has been divided into three segments for evaluation of alignment alternatives, station access projects and other segment-related options: Inner Portland, Outer Portland, and Tigard and Tualatin. The transit alternative addresses the impacts of various options for track alignment and station locations as well as related station access projects, bridgehead reconfiguration, and O&M facility sites within each of these three segments. This memo focused on the future Build Conditions of segment A during the AM peak period.

The Build models cover the following combinations of LRT alignments and other system improvements:

- Downtown Model - A1: Barbur Representative LRT Alignment
- Hamilton Model - A2-BH: Naito LRT Alignment with Bridgehead Improvements

[1] SWC Transportation Analysis Methods, June 2017, DKS Associates.

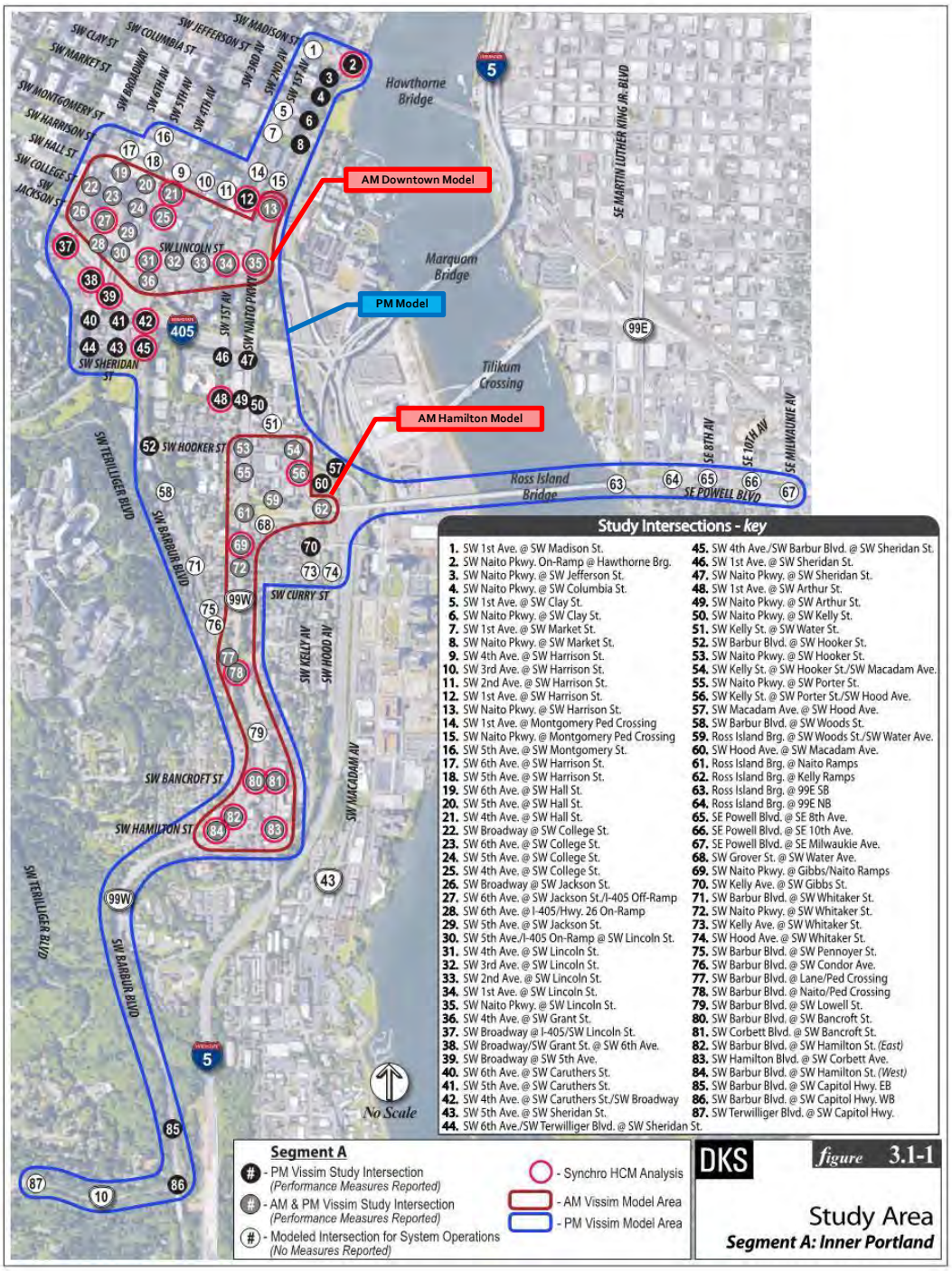

Figure 1: Segment A Study Area

Segment A Study Area and Model Area

Segment A AM analysis includes the Hamilton and Downtown subareas. Performance measures will be reported for major signalized and un-signalized intersections. Intersections with no reported performance measures were included in the model due to their influence on arrival patters, lane utilization, and queuing at study intersections with reported performance measures. AM Build Study intersections are shown in Figure 1.

Model Development Summary

The Vissim model development process used the following two documents as guidelines, the Federal Highway Administration's (FHWA's) Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software[2] and the Oregon Department of Transportation (ODOT), Protocol for Vissim Simulation[3].This section describes the steps completed in the future build year 2035 AM model development process.

Network Coding

The geometry of the AM No-Build model was used as a baseline to develop the AM Future Build models. Each alternative contained key network changes due both to LRT alignment impacts and improvements for all modes of travel. All models contained the following two No-Build projects, per Metro's directions:

- Green Loop on SW 4th Avenue – This project added a new mixed-use path along the east side of SW 4th Avenue from SW Lincoln Street to SW College Street. The project also included a new signal at SW 4th Avenue and SW College Street, with signalized bicycle crossings.
- Division Transit Project – The yet to be constructed Division Transit Line was added to the model.

For all Build models, new pedestrian crossings were assigned a default volume of 20 per hour. The exceptions were pedestrian crossings at new LRT stations, which were given a volume of 100 pedestrians per hour.

Additional edits across all alternatives included keep clear zones at intersections impacted by queue spillback under future No-Build volume conditions, and updated signal timings to accommodate changes in turn volumes as well. The remainder of the model retained existing conditions coding.

Downtown Alternative A1: Barbur Representative LRT Alignment

The Barbur Representative Alignment alternative routes the new LRT line up SW Barbur Boulevard, tying into the existing LRT network at SW 4th Avenue and SW Lincoln Street. This alternative includes the following modeled improvements from the DEIS plan set:

- *SW Lincoln Street and SW 4th Avenue* - Convert outside northbound through-right lane from I-405 northbound off-ramp to right turn only. Right turn phase held for new bicycle/pedestrian crossing.

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[2] Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software, Federal Highway Administration, June 2004.
[3] Protocol for Vissim Simulation, ODOT, June 2011

- *SW Grant Street and SW 4th Avenue* – Add new bicycle/pedestrian signalized crossing

Additional network changes beyond those identified in the DEIS design plans were identified early in the model development process as critical to the functionality of the alternative. These mitigations are listed as follows:

- *SW Bancroft Street and SW Barbur Boulevard* – The new pedestrian crossing on the south leg of the intersection (across SW Barbur Boulevard) was converted to a two-stage crossing. The crosswalk phases were overlapped with othe southbound left turn movement.
- *SW Bancroft Street and SW Corbett Avenue* – The following changes were made to this intersection to accommodate the volumes from the southbound left turn movement at SW Bancroft Street and SW Barbur Boulevard:
    - Added 150' northbound left turn lane
    - Added 90' eastbound left-through turn lane. Remaining lane changed to eastbound right turn only.
    - New traffic signal with preemption from the southbound left turn at SW Bancroft Street and SW Barbur Boulevard to the eastbound right turn movement
- *SW Hamilton Street and SW Corbett Avenue* – The following changes were made to this intersection to accommodate volume changes and congestion at this location under future conditions:
    - Added 150' northbound left turn lane
    - Added 150' eastbound left-through turn lane. Remaining lane changed to eastbound right turn only.
    - Added 200' southbound right turn lane
    - New traffic signal closely coordinated with both SW Barbur Boulevard and SW Bancroft Street

As noted in the following sections, many of these network changes were carried through either some or all the build alternatives modeled.

Hamilton Model - Alternative A2-BH: Naito LRT Alignment with Bridgehead Improvements

The Naito Alignment routes the new LRT line up SW Naito Parkway, tying into the existing LRT network at SW Naito Parkway and SW Lincoln Street. This alternative includes the following modeled improvements from the DEIS plan set:

- *SW Kelly Avenue and SW Water Avenue* – This intersection was modified to include the following changes:
    - New signal
    - Dual eastbound and westbound through lanes
    - Protected phase for eastbound left turn
- *SW Hooker Street and SW Naito Parkway* – This intersection was modified to include the following changes:
    - New signal and at-grade pedestrian crossings
    - Northbound and southbound 200' left turn lanes with protected phasing
    - Removal of northbound frontage road access to SW Kelly Avenue
    - Connect SW Hooker Street directly to SW Naito Parkway as the east/west legs of the intersection
    - Full movements allowed from SW Hooker Street onto SW Naito Parkway
- *SW Porter Street and SW Naito Parkway* – Connect to SW Naito Parkway as the eat/west legs of the intersection. Allow RI/RO access only.
- *Ross Island Bridgehead Improvement* – The improvements surrounding the new Ross Island bridgehead design are show in the design plans for the DEIS. Note that due to the numerous changes in geometry and traffic operations

on the Ross Island Bridgehead modeled in this scenario, the "RI Bridgehead" driving behavior detailed in the Calibration Report was removed, as zipper merge behavior is not expected as part of the new configuration. The modeled improvements include:

- New signal at SW Porter Street and SW Kelly Avenue, along with removal of the eastbound right turn slop lane and addition of dual eastbound right turn and left turn lanes
- New fly-over ramp connection from SW Porter Street and SW Kelly Avenue to eastbound Ross Island Bridge
- Remove of all existing ramp connections between the Ross Island Bridge and SW Naito Parkway
- New signalized T-intersection connecting the Ross Island Bridge to SW Naito Parkway including the following network elements:
  - Second southbound through lane on SW Naito Parkway, extending approximately 50' upstream
  - Single northbound through lane, and northbound right turn trap lane, widening to two lanes entering the Ross Island Bridgehead
  - Dual westbound left turn lanes and 150' westbound right turn lane
  - Center lane to move buses off the shared transitway to allow light rail progression through the intersection
  - Southbound left turns were prohibited in this alternative
- New pedestrian crossing on Ross Island Bridge and SW Water Avenue
- Closure of SW Kelly Avenue access to eastbound Ross Island Bridgehead
- Closure of SW 1st Avenue connection to SW Grover Street

- *SW Grover Street and SW Naito Parkway* – Created at-grade intersection by connecting SW Grover Street as the east leg of the intersection with RI/RO access
- *SW Gibb Street and SW Naito Parkway* – The following changes to this intersection were included in this alternative:
  - New signal
  - West leg (SW Gibbs Street) connected to SW Naito Parkway
  - Full movements allowed from SW Gibbs Street onto SW Naito Parkway
  - Crosswalks on all four legs of the intersection
  - Center-running shared transitway on SW Naito Parkway
  - 150' southbound left turn lane with protected phasing (northbound left turns prohibited)
- *SW Whitaker Street and SW Naito Parkway* - The following changes to this intersection were included in this alternative:
  - New signal
  - Direct connection of SW Whitaker Street to SW Naito Parkway as east/west leg of intersection)
  - Full movements allowed from SW Whitaker Street onto SW Naito Parkway
  - Crosswalks on all four legs of the intersection
  - Center-running shared transitway on SW Naito Parkway
  - Northbound and Southbound left turns prohibited
- *SW Naito Parkway and SW Barbur Boulevard* – this intersection contained all the design elements of the A1 option, except for the shared transitway, which was grade-separate in this alternative and did not impact operations at this intersection.
- *SW Bancroft Street and SW Barbur Boulevard* – This intersection modified as follows:

    - Added 525' southbound left turn lane
    - Closure of west leg of SW Bancroft Street
    - New signal with protected southbound left and U-turn movements
    - Center running at-grade shared transitway on SW Barbur Boulevard
- *SW Hamilton Street and SW Barbur Boulevard* – The alternative included the following changes at this intersection:
    - Removal of southbound left turn lane
    - Removal of one northbound through lane, and replacement with a 120' (from west SW Hamilton Street portion of the intersection) northbound right turn lane
    - Removal one southbound through lane
- *SW Barbur Boulevard from SW Hamilton Street to southern model extent* – This segment of the alternative contained the following network changes:
    - Center running shared transitway, with northbound bus entrance and southbound bus exit about half a mile south of SW Hamilton Street
    - Conversion of northbound 3-lane segment of SW Barbur Boulevard between SW Capitol Hwy and SW Hamilton Street to two northbound lanes, with approximately 700' of three lane merge area north of SW Capitol Hwy.
    - Northbound and southbound SW Barbur Boulevard pedestrian crossings a SW Capitol Hwy
    - Northbound and southbound SW Barbur Boulevard pedestrian crossings north of SW Park Street

Additional network changes beyond those identified in the DEIS design plans were identified early in the model development process as critical to the functionality of the alternative. These mitigations are listed as follows:

- *SW Bancroft Street and SW Barbur Boulevard* – The new pedestrian crossing on the south leg of the intersection (across SW Barbur Boulevard) was converted to a two-stage crossing. The crosswalk phases were overlapped with othe southbound left turn movement.
- *SW Bancroft Street and SW Corbett Avenue* – The following changes were made to this intersection to accommodate the volumes from the southbound left turn movement at SW Bancroft Street and SW Barbur Boulevard:
    - Added 150' northbound left turn lane
    - Added 90' eastbound left-through turn lane. Remaining lane changed to eastbound right turn only.
    - New traffic signal with preemption from the southbound left turn at SW Bancroft Street and SW Barbur Boulevard to the eastbound right turn movement
- *SW Hamilton Street and SW Corbett Avenue* – The following changes were made to this intersection to accommodate volume changes and congestion at this location under future conditions:
    - Added 150' northbound left turn lane
    - Added 150' eastbound left-through turn lane. Remaining lane changed to eastbound right turn only.
    - Added 200' southbound right turn lane
    - New traffic signal closely coordinated with both SW Barbur Boulevard and SW Bancroft Street

Only one other additional network change beyond those identified in the DEIS design plans was identified early in the model development process as critical to the functionality of the A2-BH alternative. This mitigation occurred on SW Macadam Street approaching SW Kelly Avenue on the I-5 overpass. The original DEIS design called for the outside lane on SW Macadam Street to continue to SW Kelly Avenue and the inside lane to drop as a connection to SW Hood Avenue. The

mitigated design incorporated into the A2-BH model connected both lanes of SW Macadam Street to SW Kelly Avenue, and allowed access to SW Hood Avenue as an option movement from the inside lane.

Validation

Upon the completion of the error checking, DKS validated the model results. The model validation was based on 15 simulation runs to account for variation.

The following calibration targets were used for the future year Build Vissim model:

- A quantitative comparison between forecasted two-hour balanced volumes and model output results for traffic volumes.

The GEH statistic was calculated for all study intersections. The traffic volume calibration results are documented in Appendix A to this document. HCM intersection analysis performed under a separate task of this project indicated multiple over capacity locations within the model. Therefore, the volume throughput measure (GEH) was not expected to meet calibration standards, as over-capacity intersections were not expected to serve the full assigned demand.

Future Build Models Measures of Effectiveness

The following measures of effectiveness were collected from the future Build models and summarized in the Appendices:

- Appendix A/B - Overall intersection delay and individual turn movement delay at study intersections for motor vehicles
- Appendix C/D - 95th percentile motor vehicle queue lengths
- Appendix E/F – Vissim Model Queue Plots (same format as used for Existing Conditions)

The delay measurements were calculated over the entire peak hour interval (excluding the seeding time) for each simulation run. Delay reported for a study intersection is measured upstream to the next intersection and not through. To calculate 95th percentile queues, queue length data was collected from Vissim using queue counters on critical approaches and a 120-second interval to reflect queues that form while traffic flow is impeded. The 95th percentile queue was then calculated using a percentile function.

Table 1 shows the Downtown model network performance measures generated by Vissim and Table 2 shows the measures for the Hamilton model. The key measure is latent demand, vehicles unable to enter the network due to queue spillback during the analysis period (7-9 AM). As shown in Table 1, there is no latent demand during the AM 2-hour peak period indicating there is adequate capacity to serve all demand. As shown in Table 2, nearly 5% of the demand in the Hamilton model area during the AM 2-hour peak is unserved. This demand is a combination of latent demand from northbound Barbur, eastbound Capitol Highway, northbound Corbett Avenue, and northbound Macadam Avenue. The traffic bottlenecks that result in these congestion hot spots are lack of available capacity at Barbur/Hamilton and Corbett/Hamilton.

Table 1: Build Network System Performance

Model/scenario	Total Vehicles Arrived (7-9 AM)	Latent Demand (7-9 AM)	Percent Demand Unserved (7-9 AM)	Total Delay (vehicle-hours, 7-9 AM)
Downtown / No-Build	15,200	0	0%	130
Downtown / A1	14,510	0	0%	140
Hamilton / No Build	21,430	1080	4.8%	980
Hamilton / A2-BH	20,275	885	4.2%	1060

APPENDIX

Appendix A: Downtown Alternative A1 Vissim Model Delay

Appendix B: Hamilton Alternative A2-BH Vissim Model Delay

Appendix C: Downtown Alternative A1 Vissim Model Queue Data

Appendix D: Hamilton Alternative A2-BH Vissim Model Queue Data

Appendix E: Downtown Alternative A1 Vissim Model Queue Plots

Appendix F: Hamilton Alternative A2-BH Vissim Model Queue Plots

Appendix A

Downtown Alternative A1 Vissim Model Delay

Metro SW Corridor DEIS- Segment A - AM model

Future Build Vissim Model Methodology and Results Memorandum

Alternative A1 Delay Results for AM Peak Hour																			
Delay (Sec)																			
Study Intersection No.		13	19	20	21	22	23	24	25	26	27	29	30	31	32	33	34	35	36
Approach	**Movement**	**Harrison/ Naito**	**Hall/ 6th**	**Hall/ 5th**	**Hall/ 4th**	**Broadway/ College**	**6th/ College**	**College/ 5th**	**4th/ College**	**Broadway/ Jackson**	**6th/ Jackson**	**5th/ Jackson**	**5th Ave Rail Crossing**	**Lincoln/ 4th**	**3rd/ Lincoln**	**Lincoln/ 3rd**	**Lincoln/ 1st**	**Lincoln/ Naito**	**4th/ Grant**
NB	Left	44	12		6		21		2		1			11		18	28		
	Thru	13	8		7		15		2		1			13			12	9	3
	Right	17												3	7	6			
SB	Left			13		7		4		5						13			
	Thru	15		12		6		5		7		9	3				17	7	
	Right	16				6				9		55			0	6	19		
EB	Left	43	21		17		27		14		8			39		30	31		11
	Thru	4		12		15		30		0		0			1	2	11		
	Right	24	16	13		17	7	27		12			2	17	0	7			
WB	Left	38		26		31		16		0						26			
	Thru	25	18	26		27	7	16		17				16	3	10			
	Right	27	7				7				0			7	3	8			
Intersection Total		**17**	**9**	**14**	**7**	**15**	**15**	**11**	**2**	**7**	**1**	**10**	**2**	**12**	**2**	**9**	**18**	**8**	**3**

Appendix B

Hamilton Alternative A2-BH Vissim Model Delay

Metro SW Corridor DEIS- Segment A - AM model

Future Build Vissim Model Methodology and Results Memorandum

Alternative A2-BH Delay Results for AM Peak Hour												
Approach	**Movement**	**Delay (Sec)**										
Study Intersection Number		**53**	**56**	**62**	**69**	**72**	**78**	**80**	**81**	**82**	**83**	**635**
Approach	**Movement**	**SW Naito Pkwy @ SW Hooker St.**	**SW Kelly St. @ SW Porter St**	**Ross Island Brg.@ Kelly Ramps**	**SW Naito Pkwy @ SW Gibbs St.**	**SW Naito Pkwy @ SW Whitaker St.**	**SW Barbur Blvd.@ SW Naito Pkwy**	**SW Barbur Blvd.@ SW Bancroft St.**	**SW Corbett Blvd. @ SW Bancroft St.**	**SW Barbur Blvd.@ SW Hamilton St.**	**SW Hamilton Blvd. @ SW Corbett Blvd.**	**Ross Island Brg.@ SW Naito Pkwy**
NB	Left	4							103		254	
	Thru	9	77		8	21	35	11	39	116	216	31
	Right			44	0	0	29	13	41	119	216	5
SB	Left		57		133			86	21		83	
	Thru	8	19		17	5	17	4	26	7	84	13
	Right	-	18		16	4			22	11	75	
EB	Left	36			53				33	230	70	
	Right	7	26		39				13	258	10	
	Through		43	20	4	10			30	302	70	
WB	Left	50	162		54		48		37	103	54	136
	Thru		156		39				45	103	72	
	Right	12	150		19	0	44	42	14	104	17	149
Intersection Total		9	97	32	17	14	35	14	49	92	148	64

Appendix C

Downtown Alternative A1 Vissim Model Queue Data

Metro SW Corridor DEIS- Segment A - AM model

Future Build Vissim Model Methodology and Results Memorandum

Alternative A1 Queuing Results for AM Peak Hour																			
95th Percentile Queue																			
Study Intersection No.		**13**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**
Approach	**Movement**	**Harrison/ Naito**	**Hall/ 6th**	**Hall/ 5th**	**Hall/ 4th**	**Broadway/ College**	**6th/ College**	**College/ 5th**	**4th/ College**	**Broadway/ Jackson**	**6th/ Jackson**	**5th/ Jackson**	**5th Ave Rail Crossing**	**Lincoln/ 4th**	**3rd/ Lincoln**	**Lincoln/ 3rd**	**Lincoln/ 1st**	**Lincoln/ Naito**	**4th/ Grant**
NB	Left	222	-	-	-	-	-	-	-	-	-	-	-	427	-	-	111	-	-
	Thru	541	162	-	368	-	267	-	-	-	-	-	-	254	-	23	80	580	-
	Right	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-
SB	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Thru	141	-	160	-	93	-	162	-	161	-	220	192	-	-	21	91	157	-
	Right	-	-	-	-	-	-	-	-	-	-	-	201	-	0	-	-	-	-
EB	Left	181	-	-	89	-	-	-	43	-	41	-	-	62	-	21	69	-	40
	Thru	95	63	41	-	21	42	46	-	22	-	-	-	69	-	97	74	-	-
	BAT	58	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-
WB	Left	47	-	-	-	-	-	-	-	-	-	-	-	-	-	22	-	-	-
	Thru	48	66	95	-	174	76	163	-	23	-	-	-	104	-	162	45	-	-
	Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix D

Hamilton Alternative A2-BH Vissim Model Queue Data

Metro SW Corridor DEIS- Segment A - AM model

Future Build Vissim Model Methodology and Results Memorandum

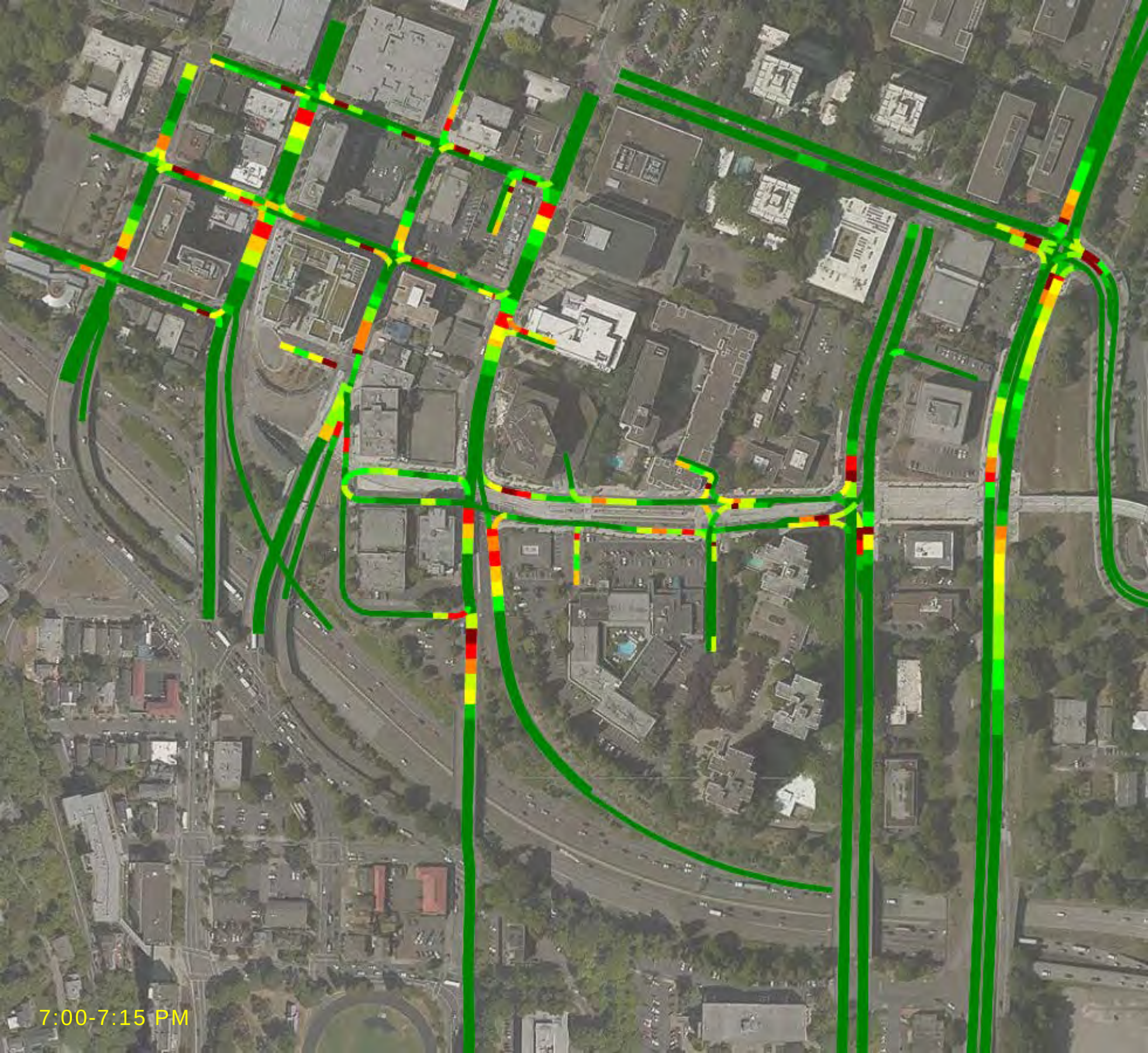
Alternative A2-BH 95th Percentile Queuing Results for AM Peak Hour												
Study Intersection Number		53	56	62	69	72	78	80	81	82	83	635
Approach	Movement	SW Naito Pkwy @ SW Hooker St.	SW Kelly St. @ SW Porter St	Ross Island Brg.@ Kelly Ramps	SW Naito Pkwy @ SW Gibbs St.	SW Naito Pkwy @ SW Whitaker St.	SW Barbur Blvd.@ SW Naito Pkwy	SW Barbur Blvd.@ SW Bancroft St.	SW Corbett Blvd. @ SW Bancroft St.	SW Barbur Blvd.@ SW Hamilton St.	SW Hamilton Blvd. @ SW Corbett Blvd.	Ross Island Brg.@ SW Naito Pkwy
NB	Left	21	-	-	-	-	-	-	524	-	1577	-
	Thru	4485	3660	-	278	901	1310	767	56	8938	1575	521
	Right	-	-	722	-	-	1285	-	-	155	-	-
SB	Left	0	63	-	591	-	-	438	-	-	-	-
	Thru	245	184	-	585	228	172	92	-	318	582	175
	Right	-	-	-	-	-	-	-	-	-	-	-
EB	Left	-	-	-	-	-	-	-	-	-	-	-
	Thru	20	-	463	21	-	-	-	86	627	71	-
	Right	-	-	-	-	-	-	-	231	-	125	-
WB	Left	-	1834	-	-	-	-	-	-	458	-	4010
	Thru	33	-	-	126	-	825	-	-	-	83	-
	Right	-	1832	-	-	-	-	255	-	449	-	4020

Appendix E

Downtown Alternative A1 Vissim Model Queue Plots

Metro SW Corridor DEIS- Segment A - AM model

Future Build Vissim Model Methodology and Results Memorandum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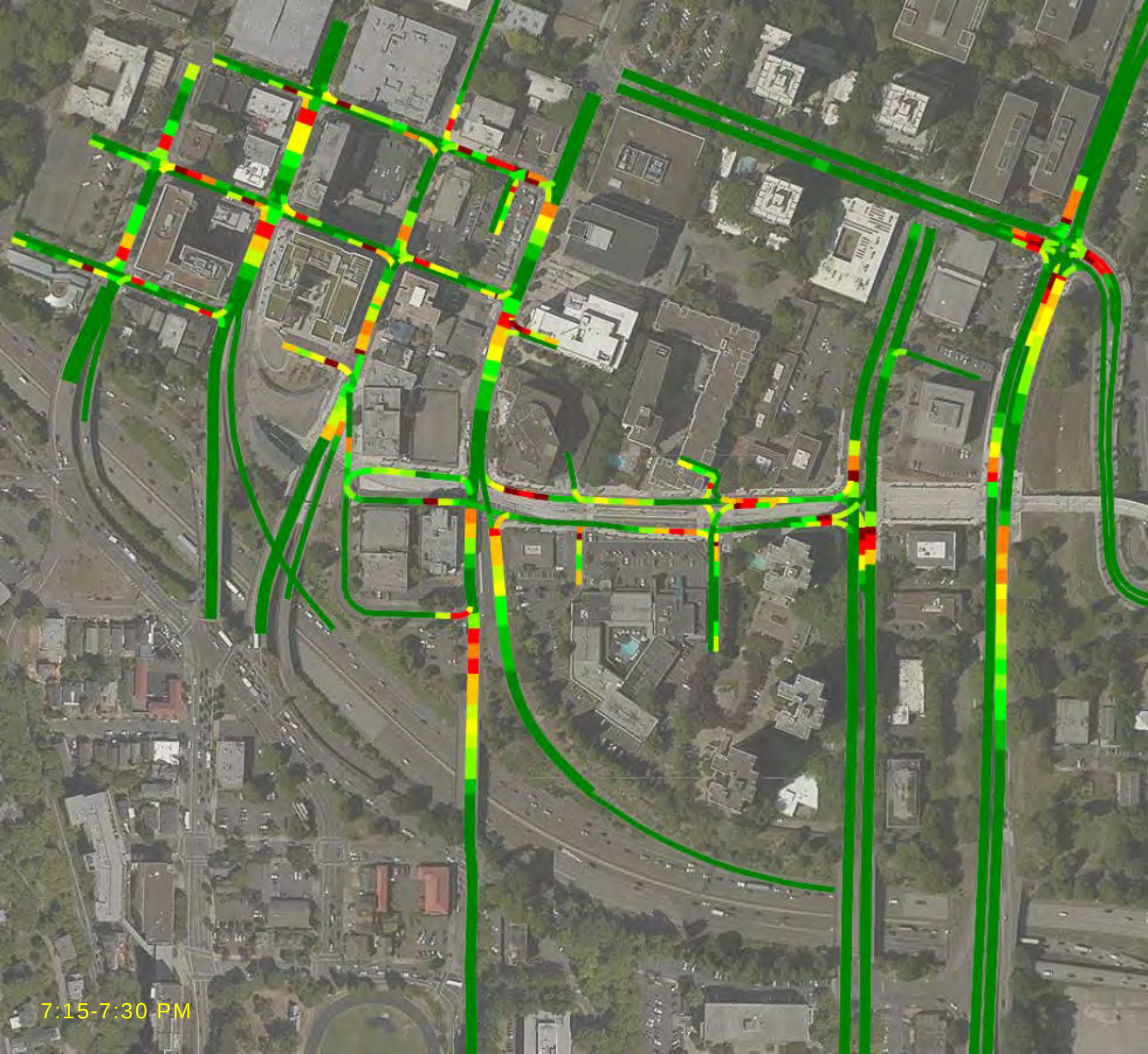
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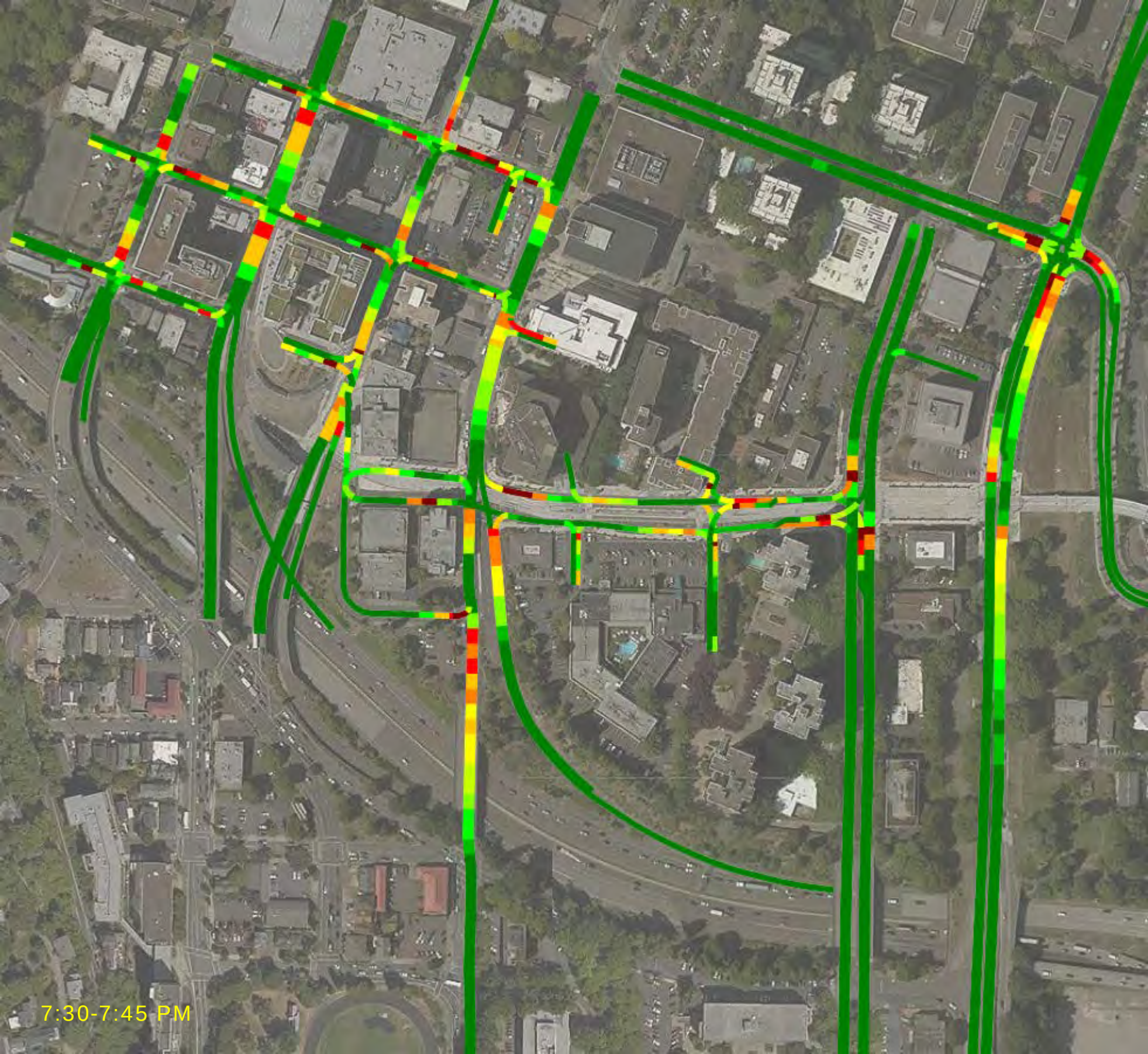
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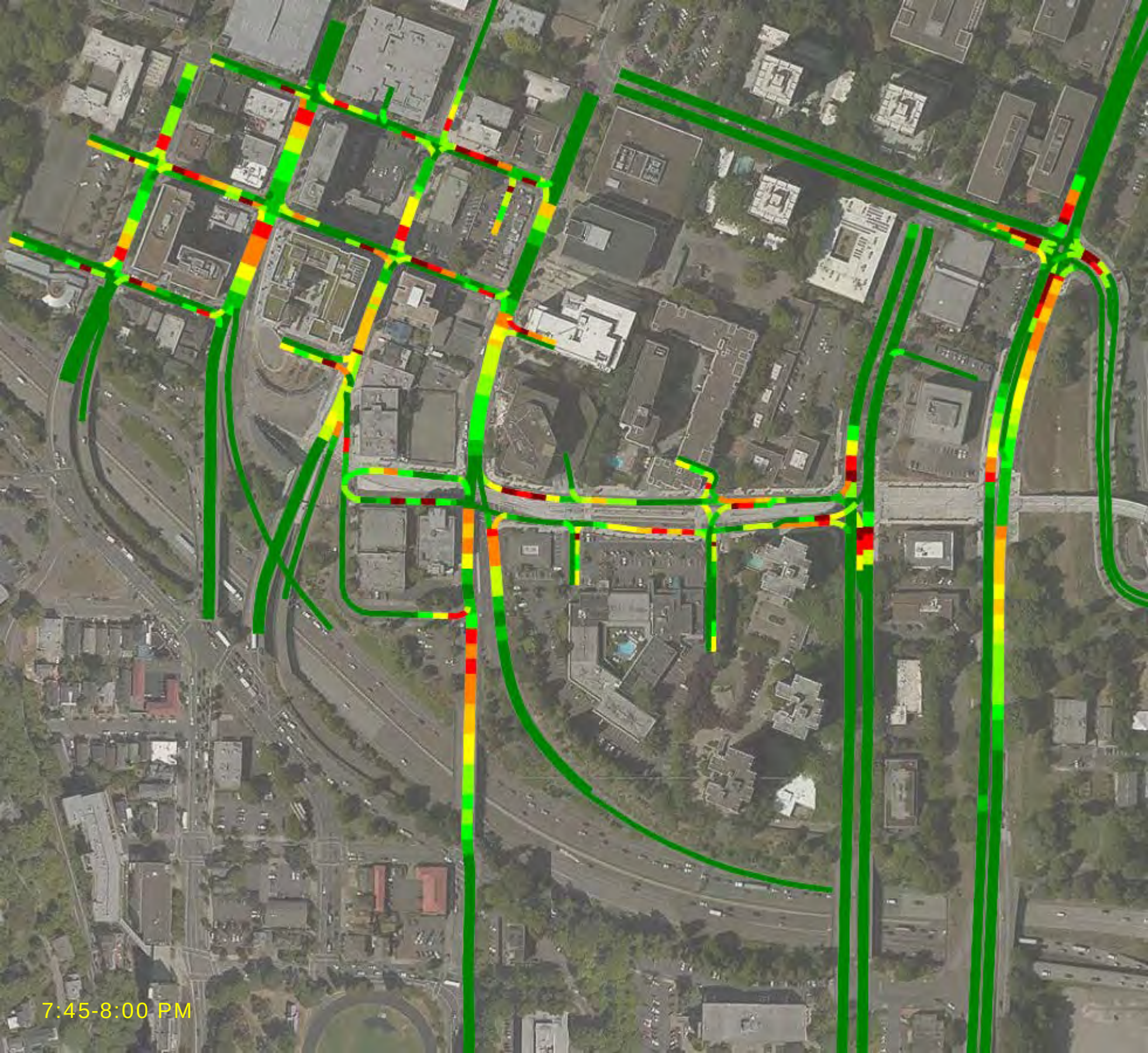
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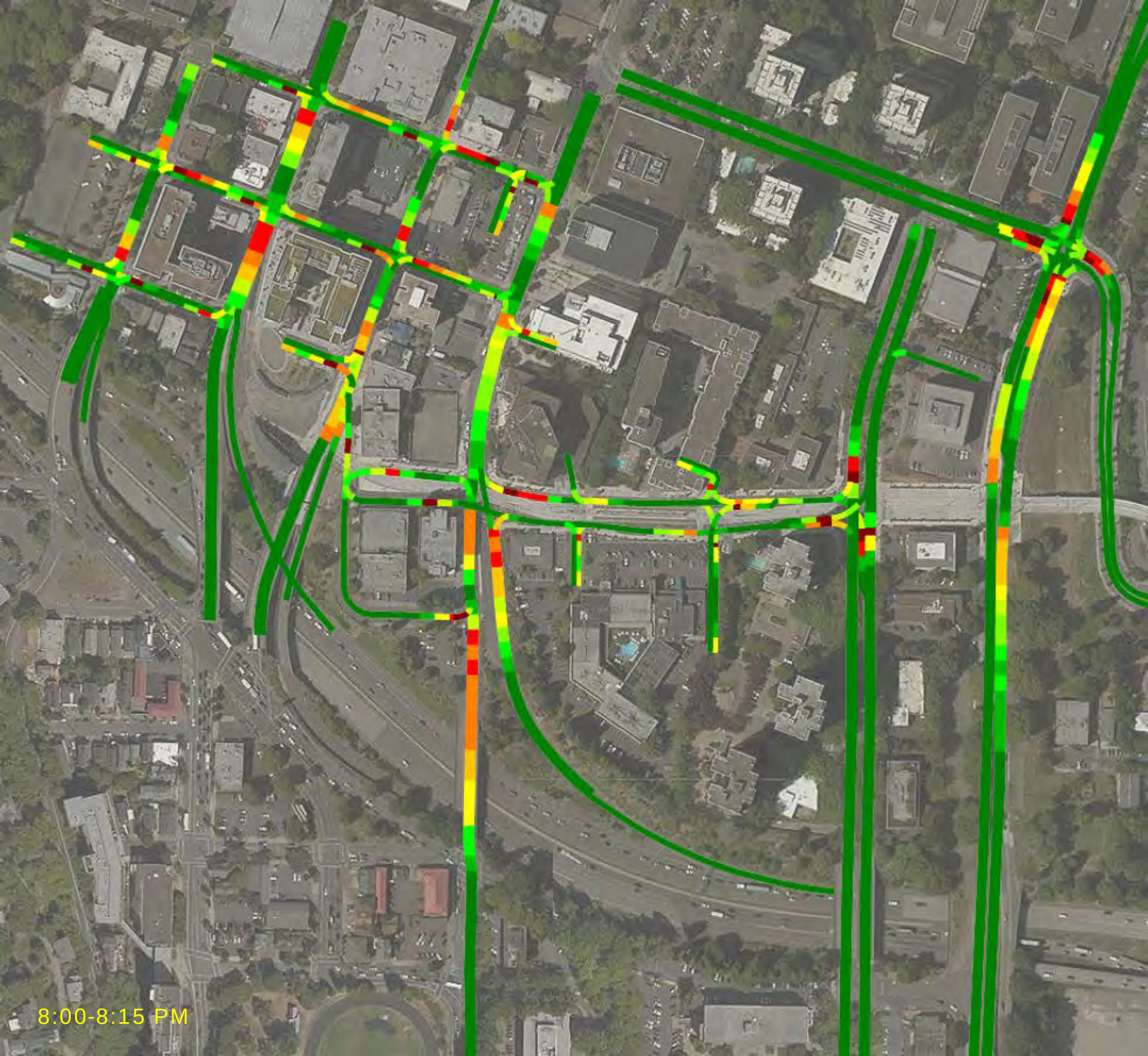
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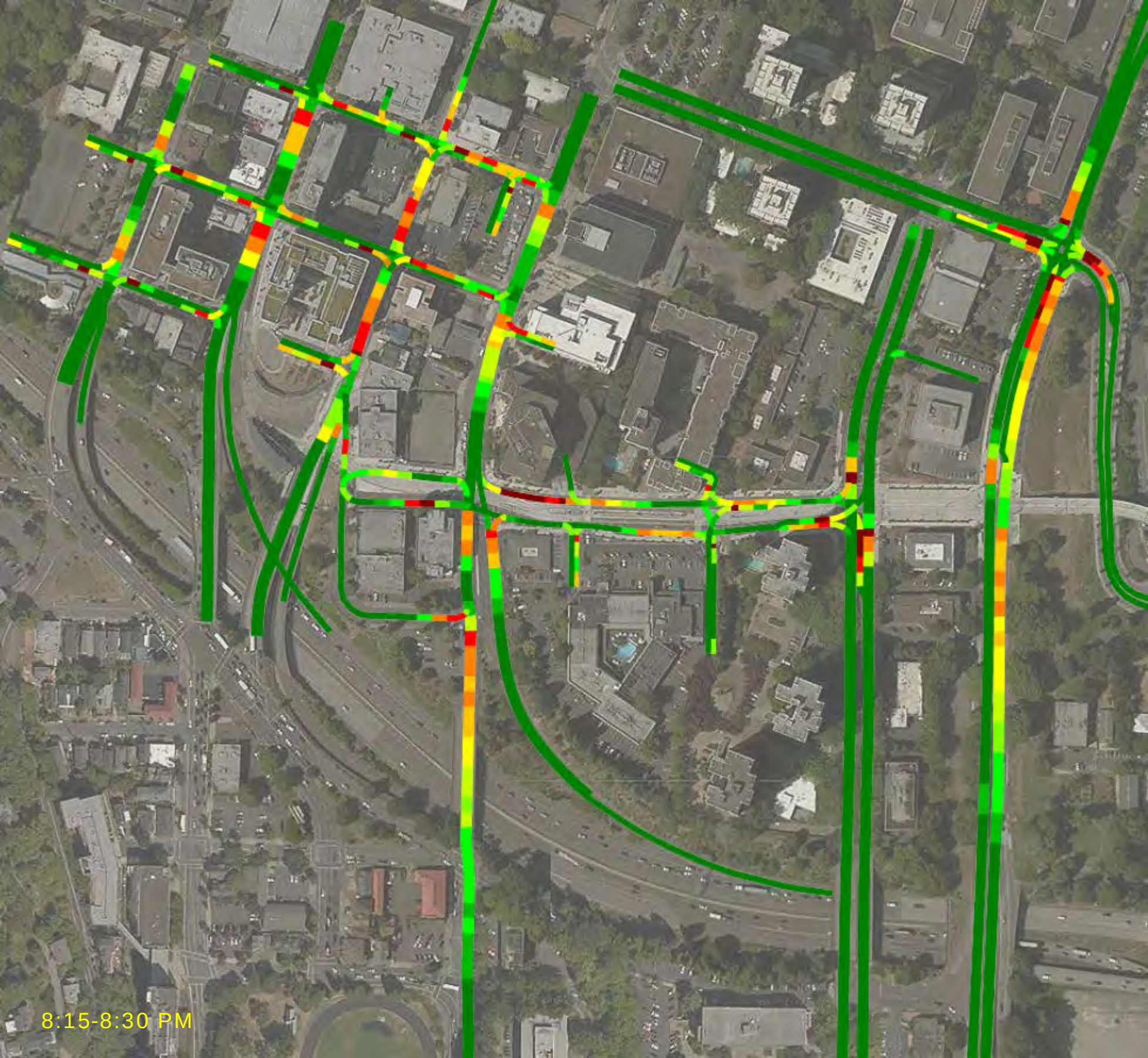
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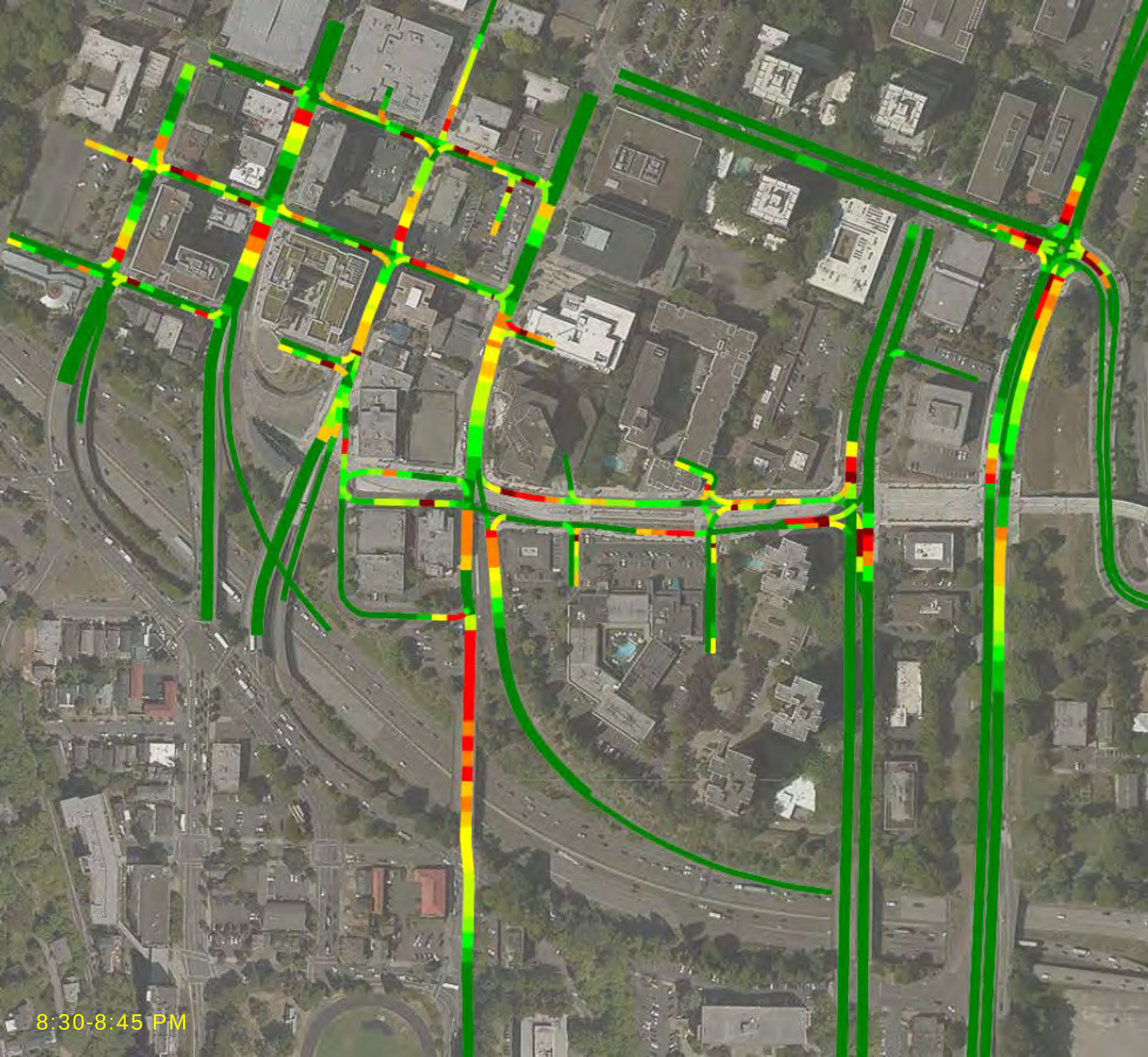
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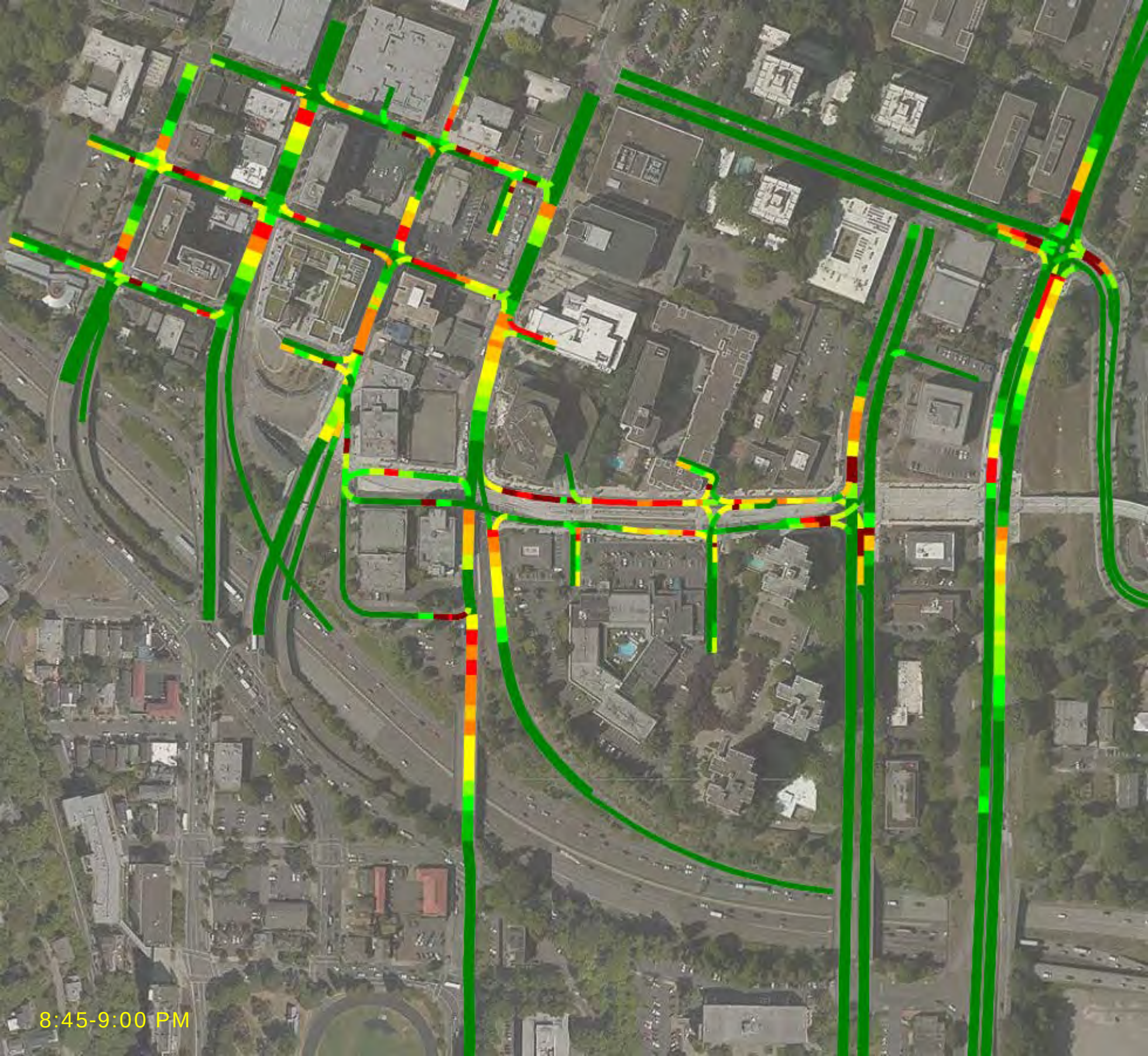
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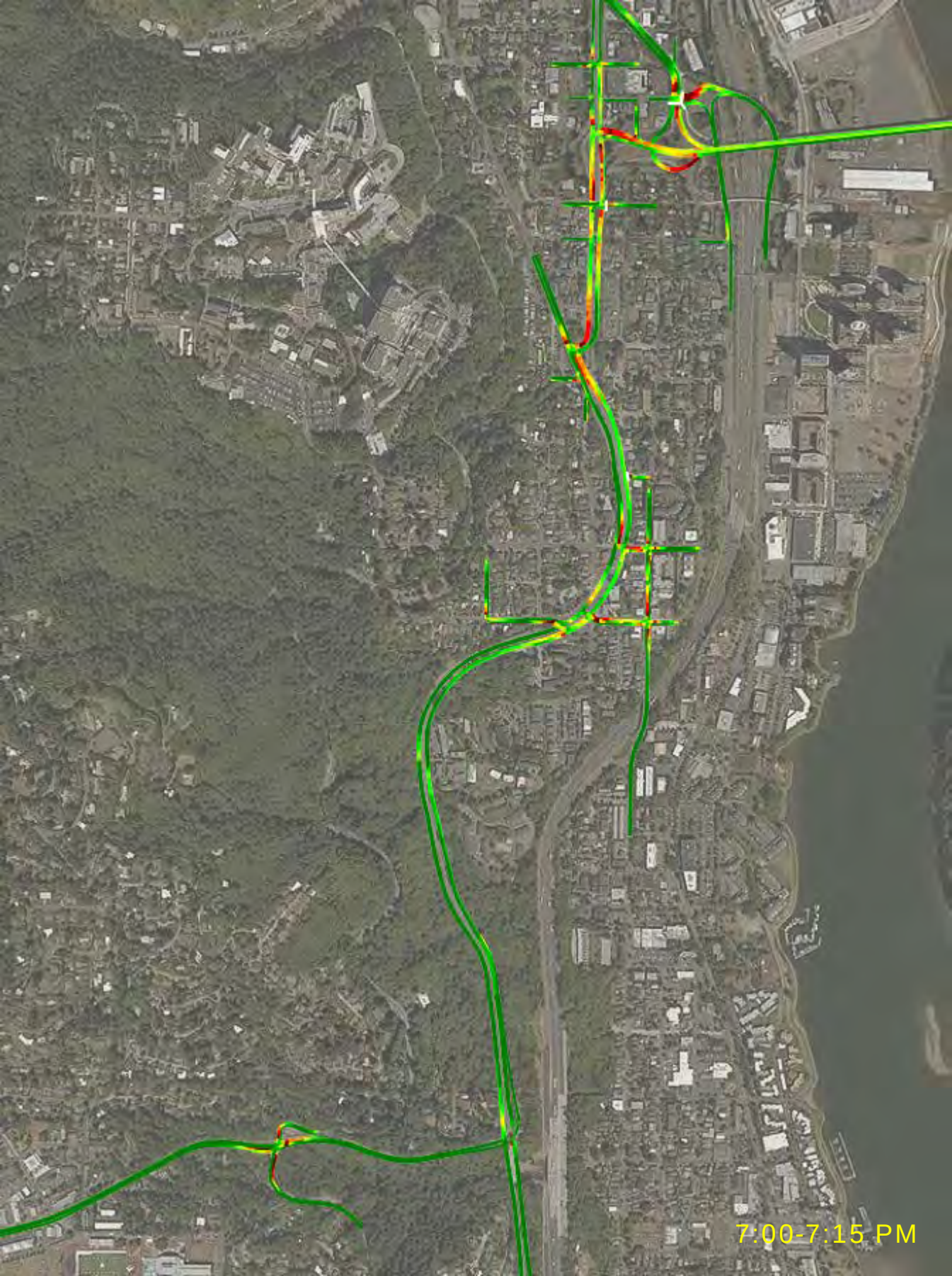
Appendix F

Hamilton Alternative A2-BH Vissim Model Queue Plots

Metro SW Corridor DEIS- Segment A - AM model

Future Build Vissim Model Methodology and Results Memorandum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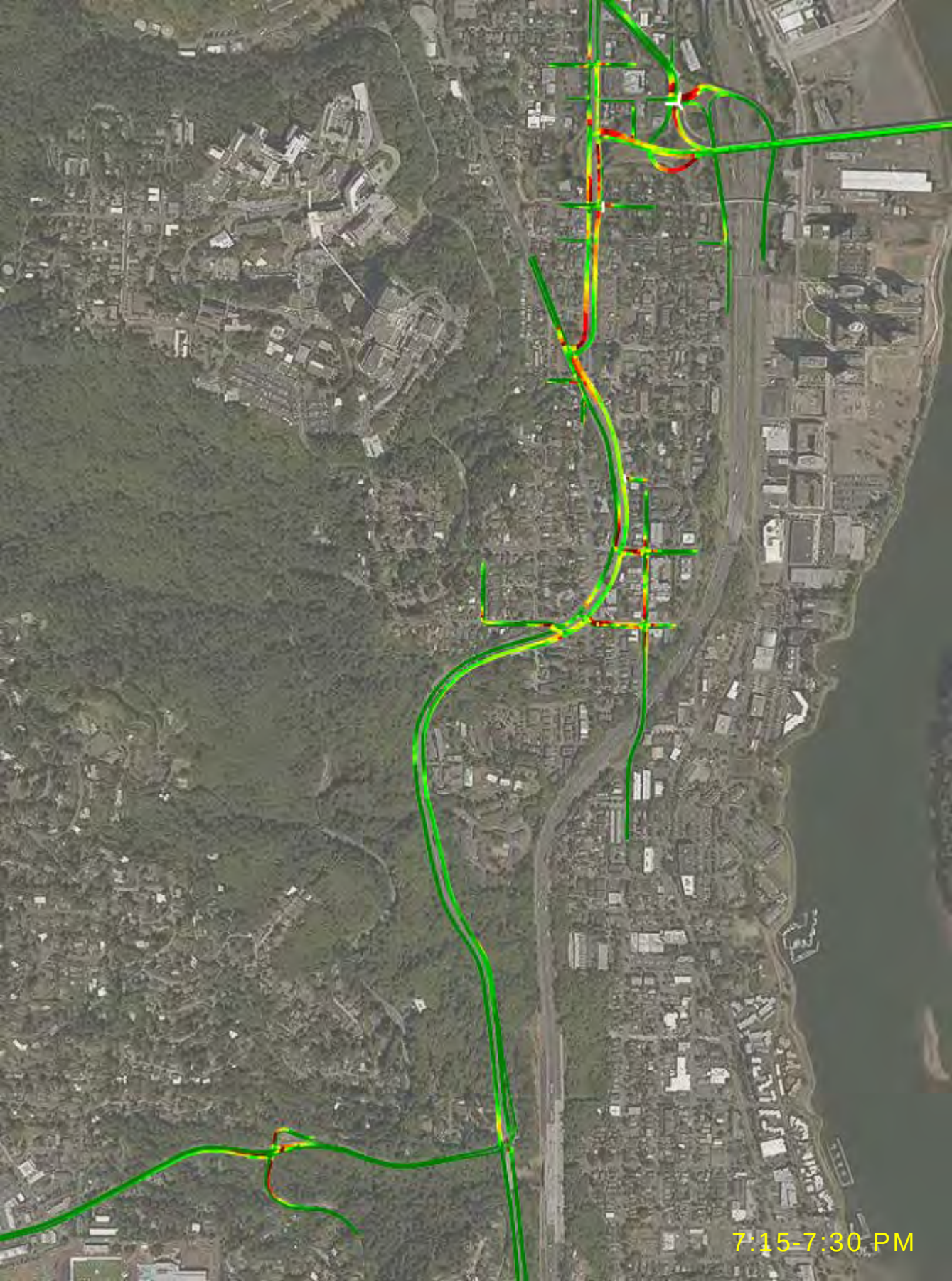
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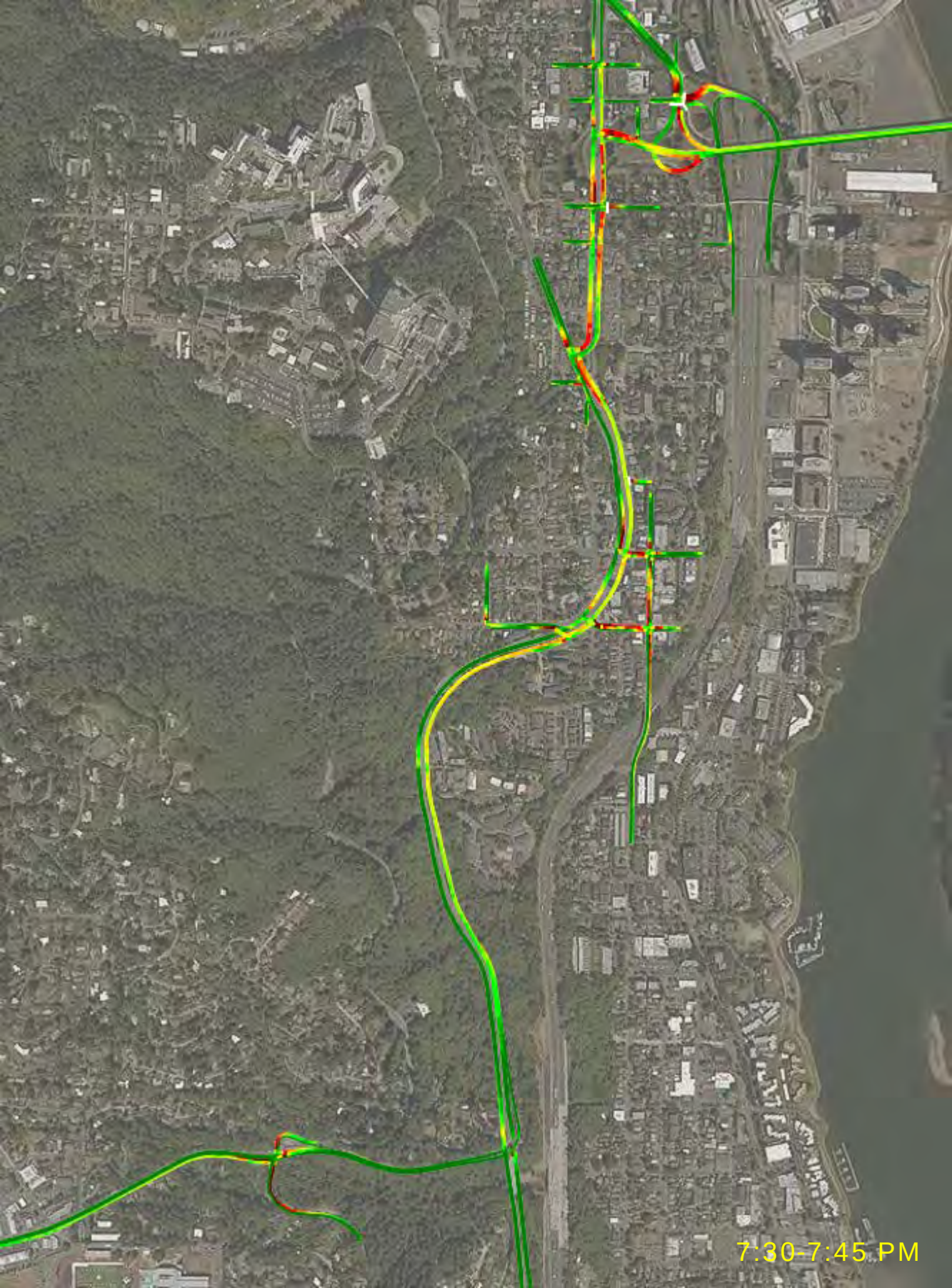
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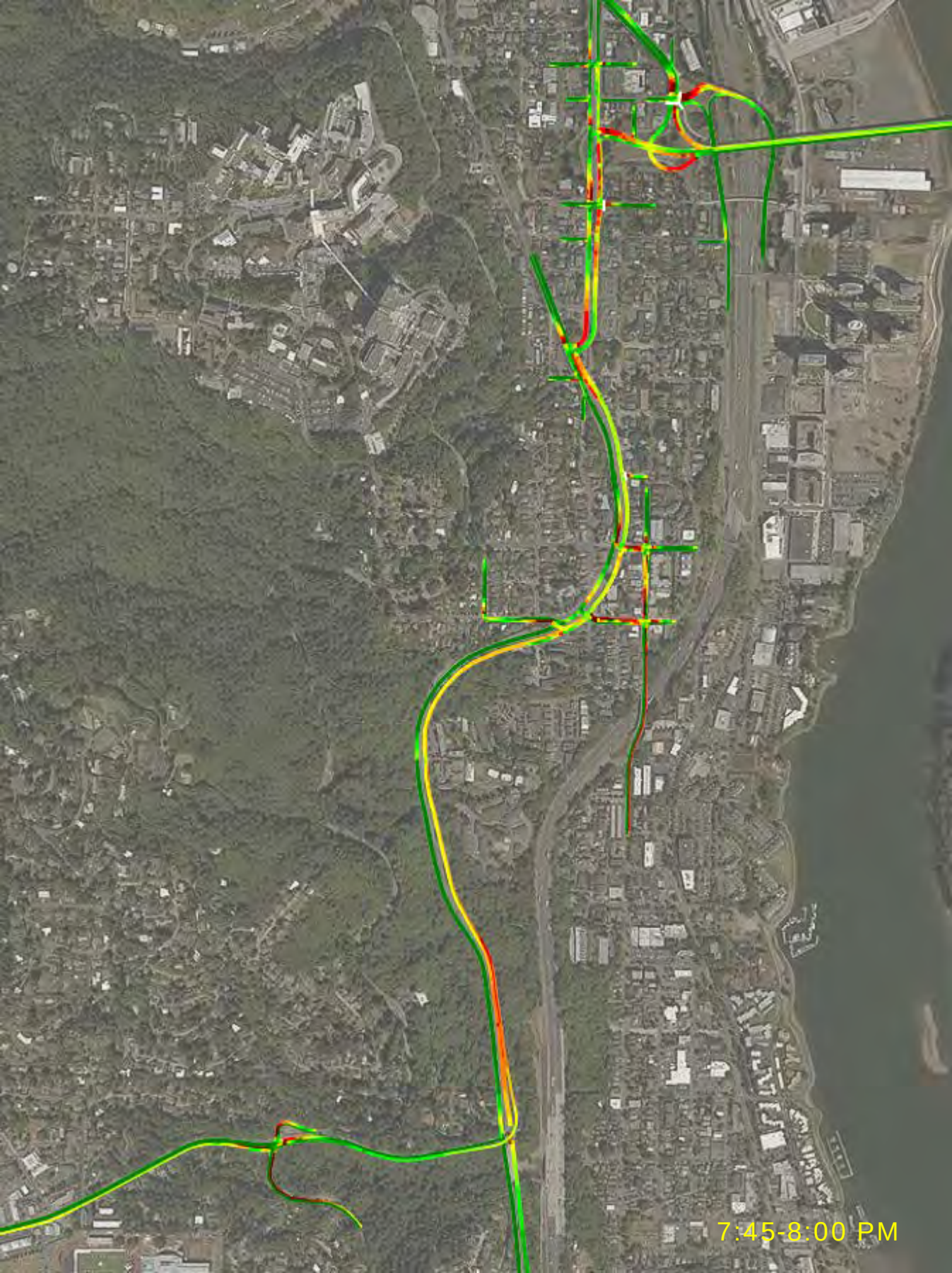
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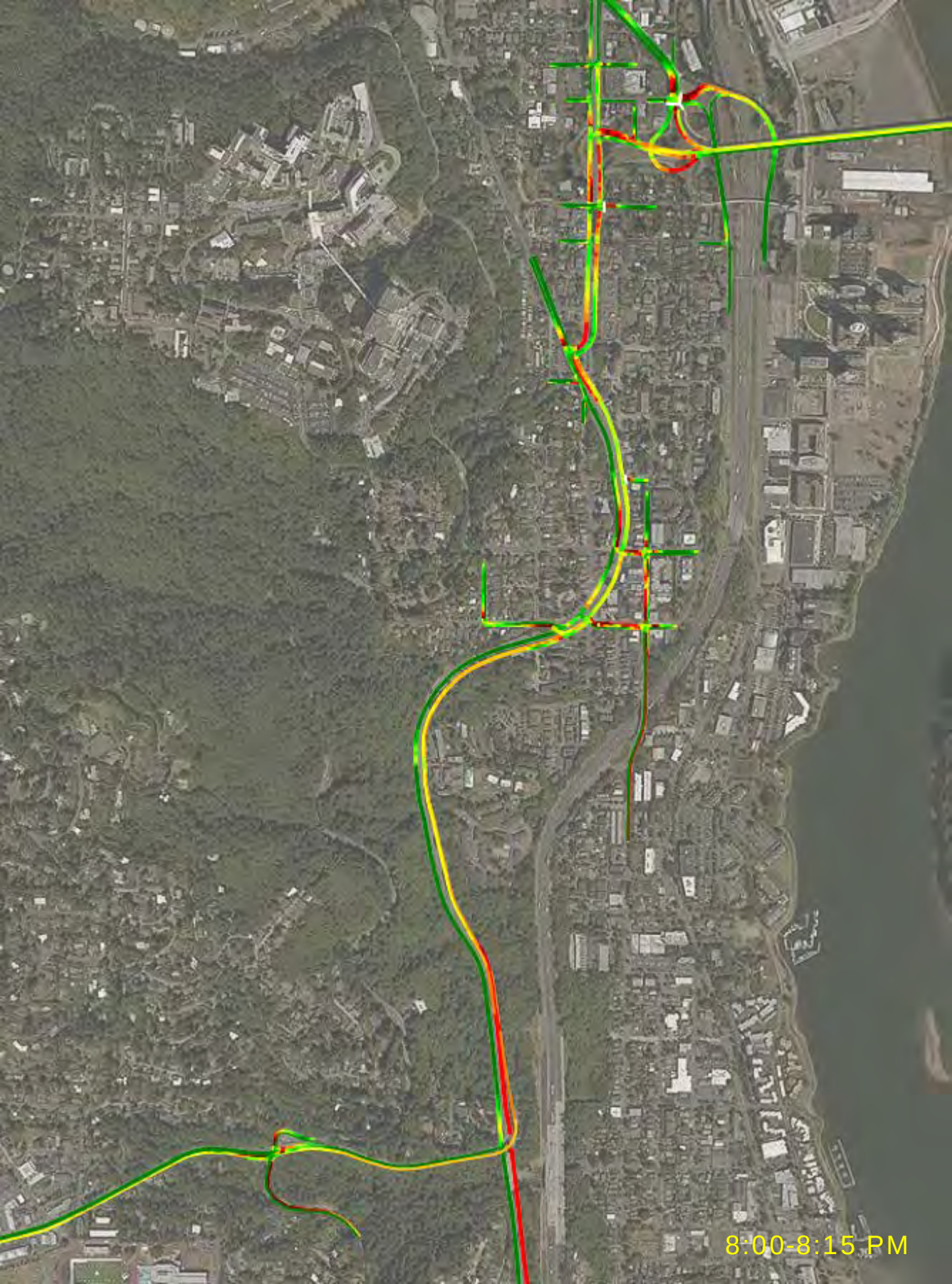
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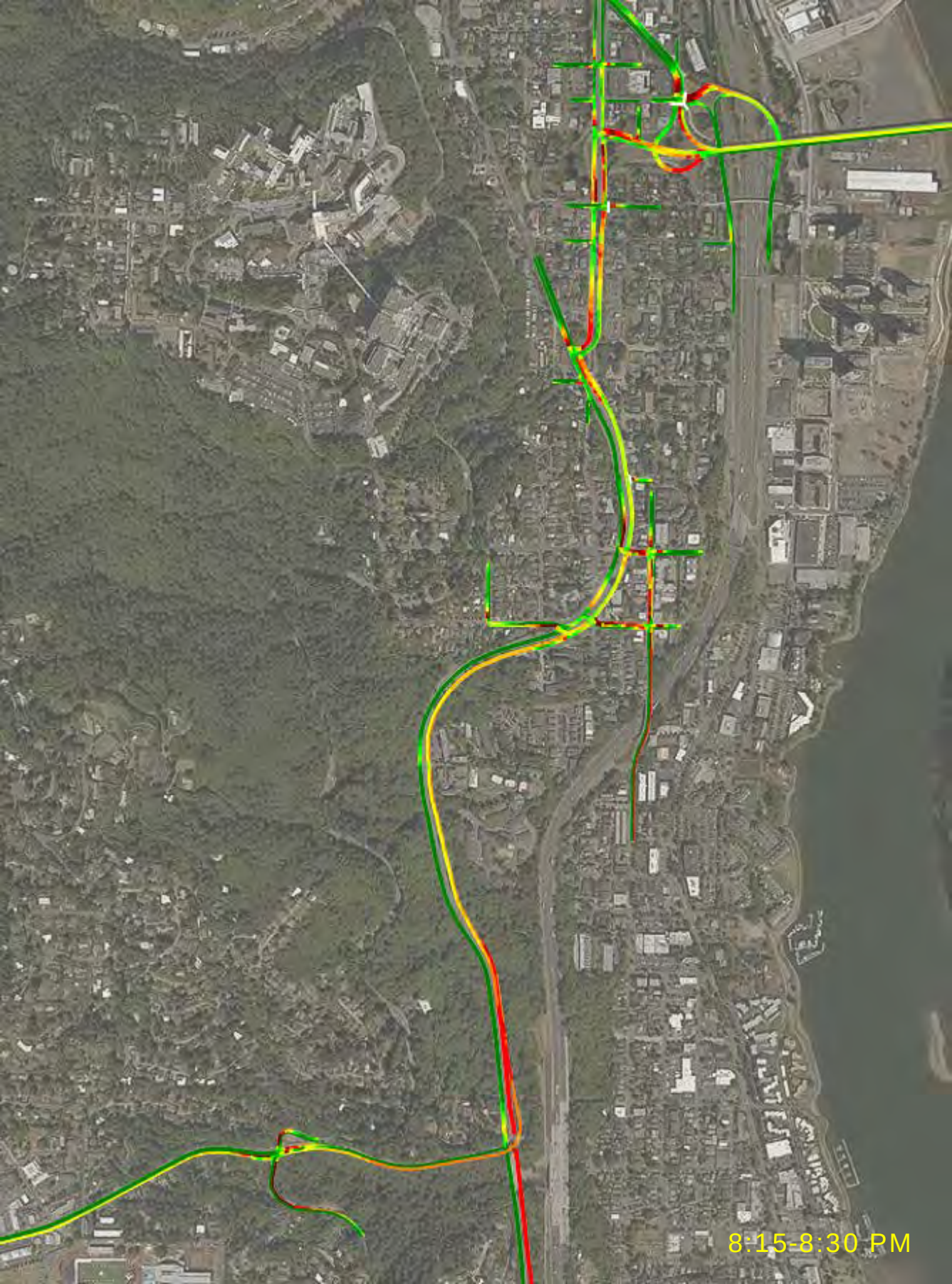
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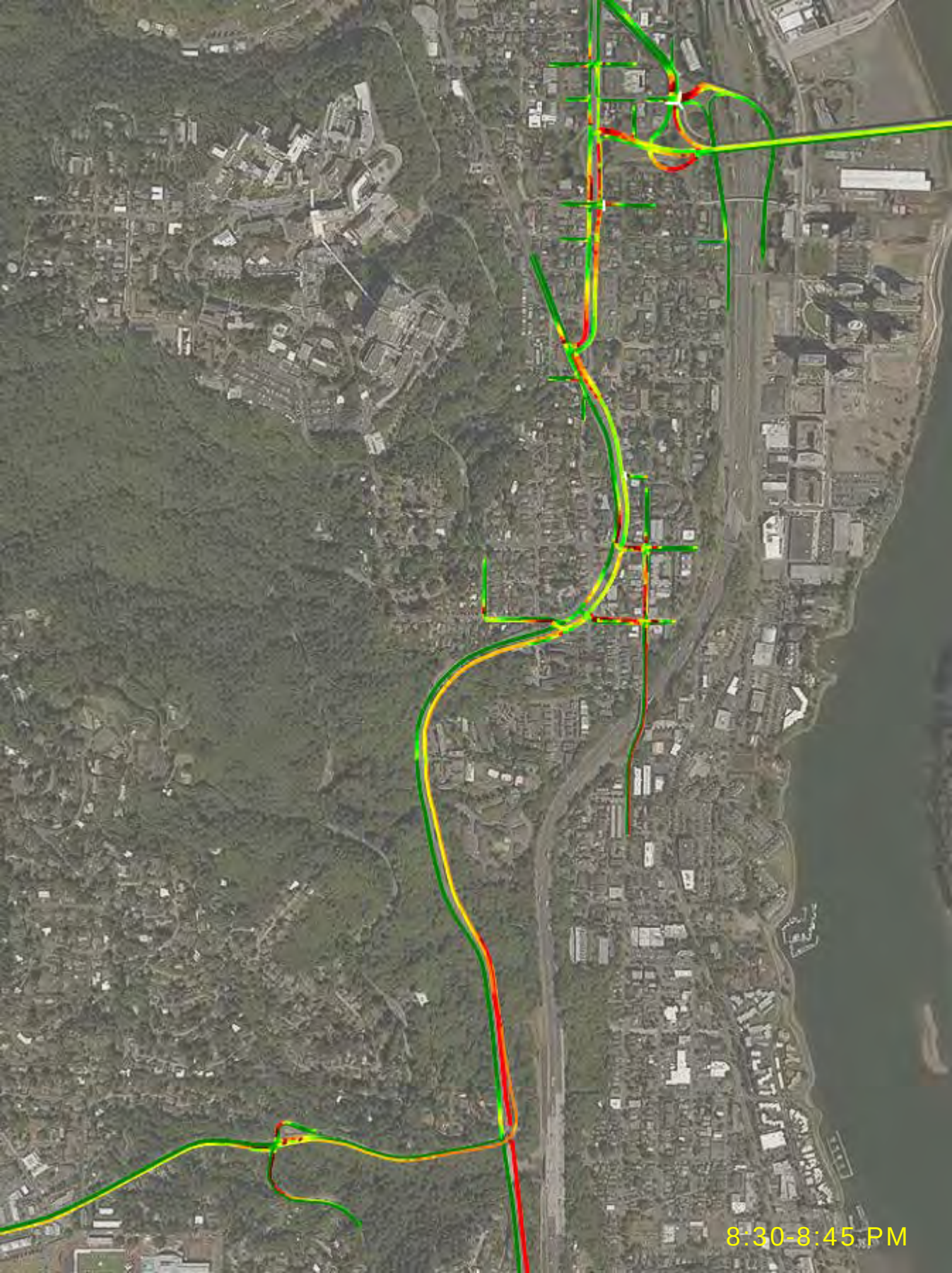
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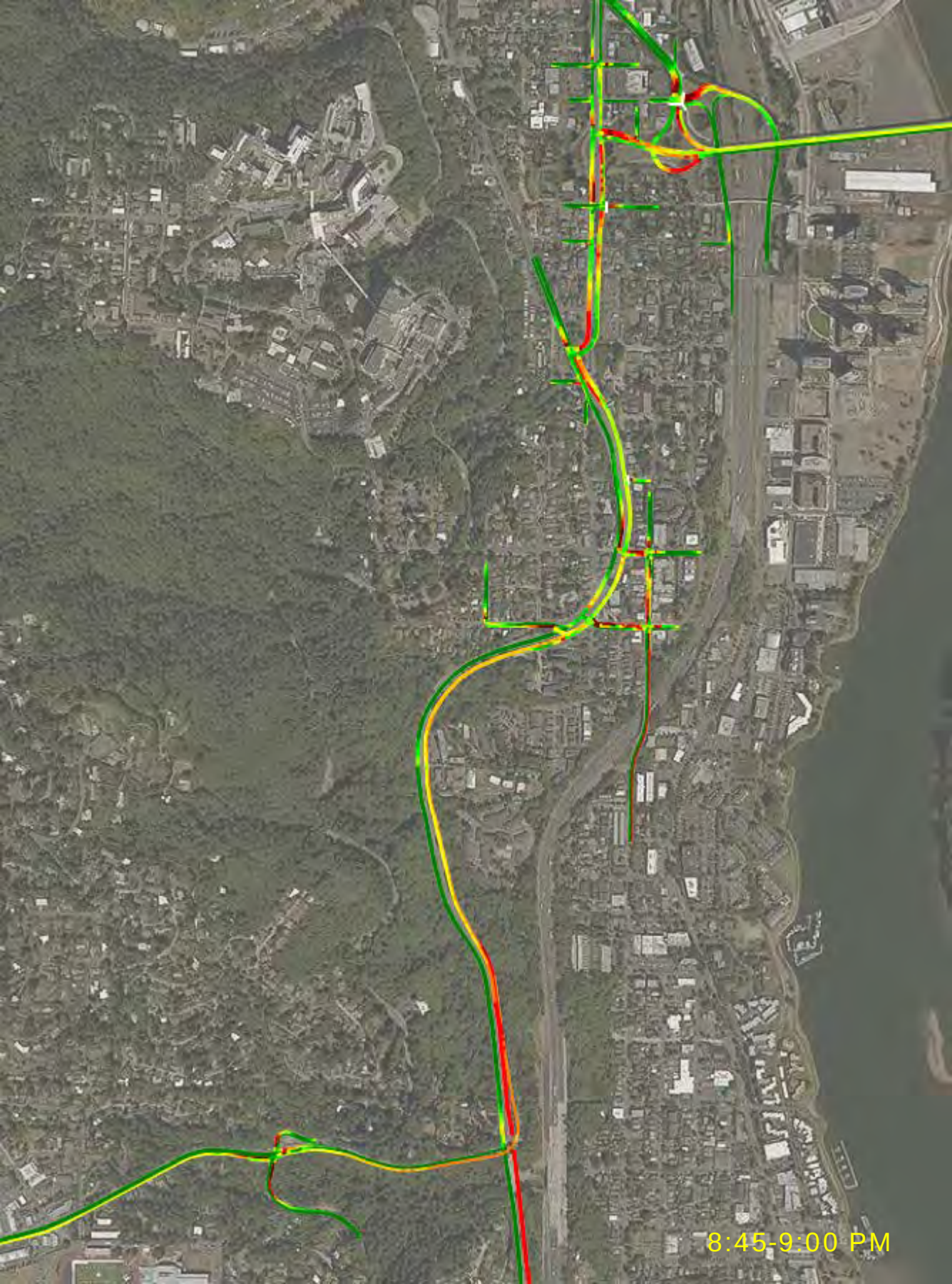
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