Snelling Bus Rapid Transit

June 17, 2013

Technical Advisory Committee Meeting #2

& VISSIM Traffic / TSP Evaluation Wrap-Up

Today's meeting

- Introductions
- VISSIM Traffic Modeling / TSP Evaluation – SRF
- Design Contract Scope
- Roundtable / Project Coordination Updates
- Standing Meeting Schedule

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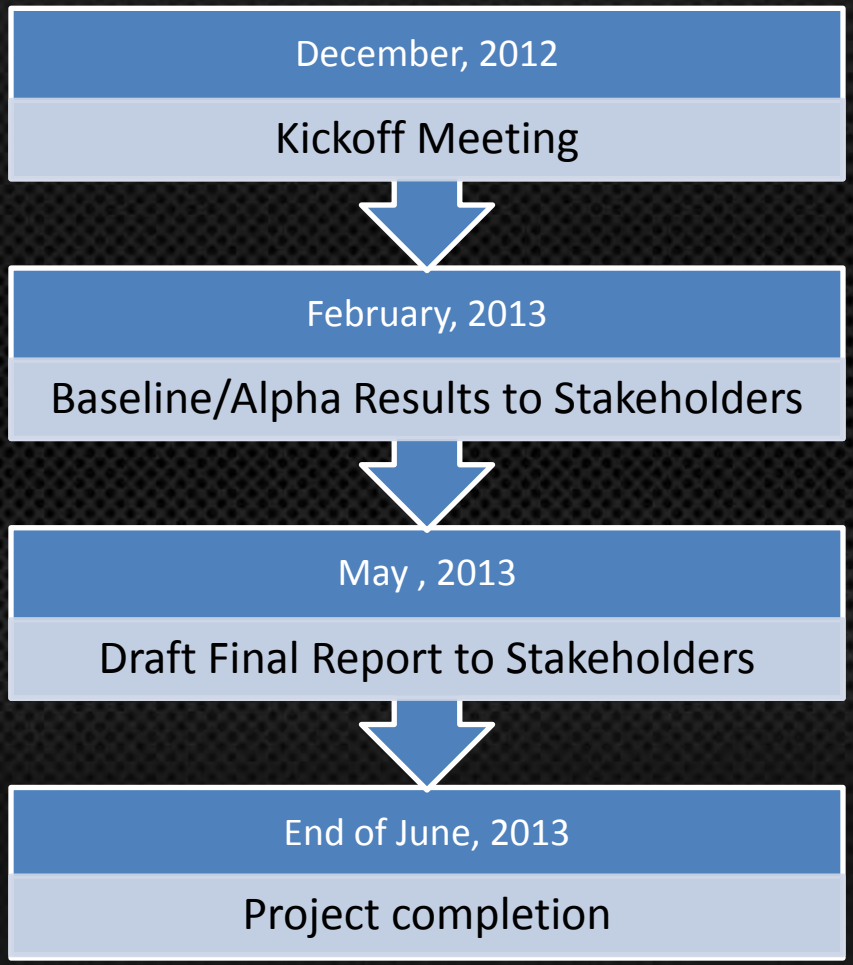
Overview

- Background
- Study Methodology
- Modeling Assumptions
- Modeling Results
- Animation
- Findings and Recommendations

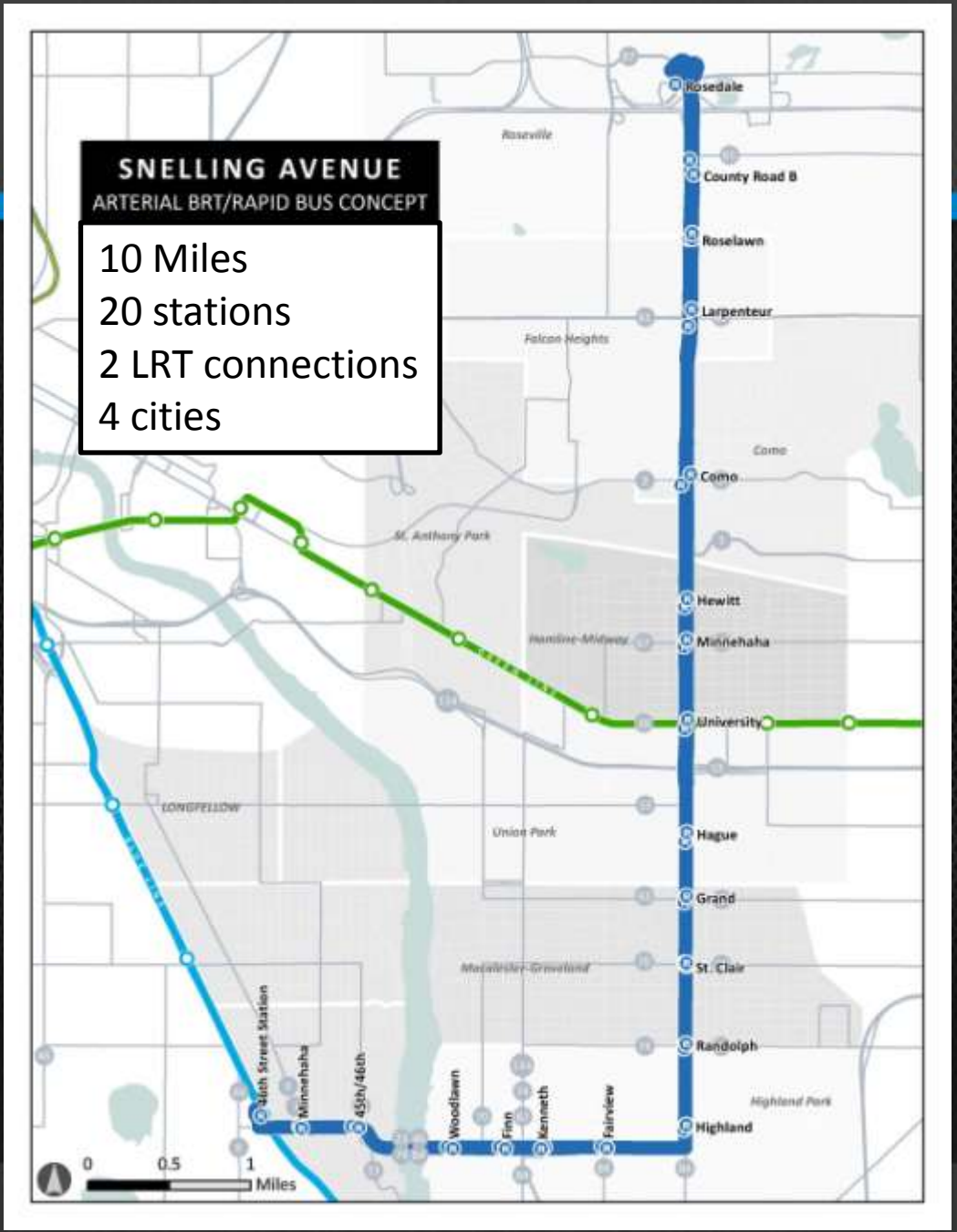


Background

- Project Goals:

1. Evaluate traffic impact of buses stopping in travel lane

2. Assess potential benefit of Transit Signal Priority



Study Methodology

- VISSIM

- Scenarios Modeled

No.	Scenario Name
1.	Baseline
2.	Rapid Bus Alpha
3.	Rapid Bus Beta
4.	Rapid Bus Refined
5.	Rapid Bus Refined with TSP

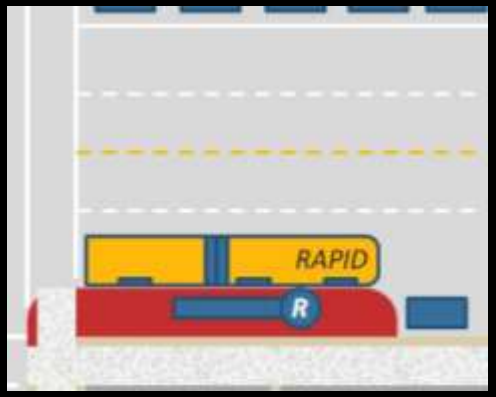
VISSIM Model

- Intersections
- Roadway geometry
  - LRT interaction
- Signal timing
- Traffic volumes
  - SRF (2012)
  - MnDOT (2008)
  - Snelling Multi-Modal Transp. Plan (2004-05)
- ASC/3 SIL controller
- Multiple runs

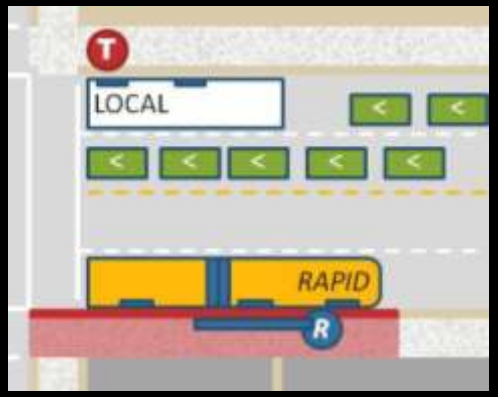
Rapid Bus Assumptions

- Stations
  - Number
  - Type
  - Location
- Occupancy
- Schedule
- Dwell Time

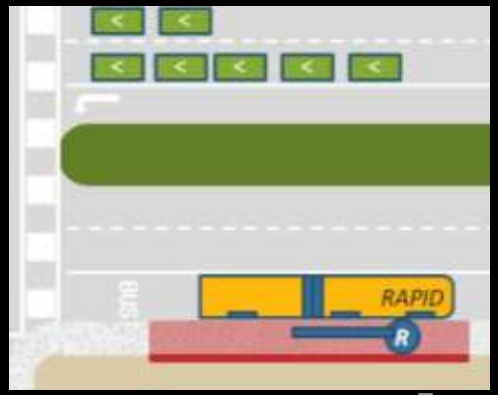
Bumpout
Stop in Travel Lane;
Replace existing on-street parking



Curbside
Stop in Travel Lane



Curbside
Stop in Bus-Only Shoulder



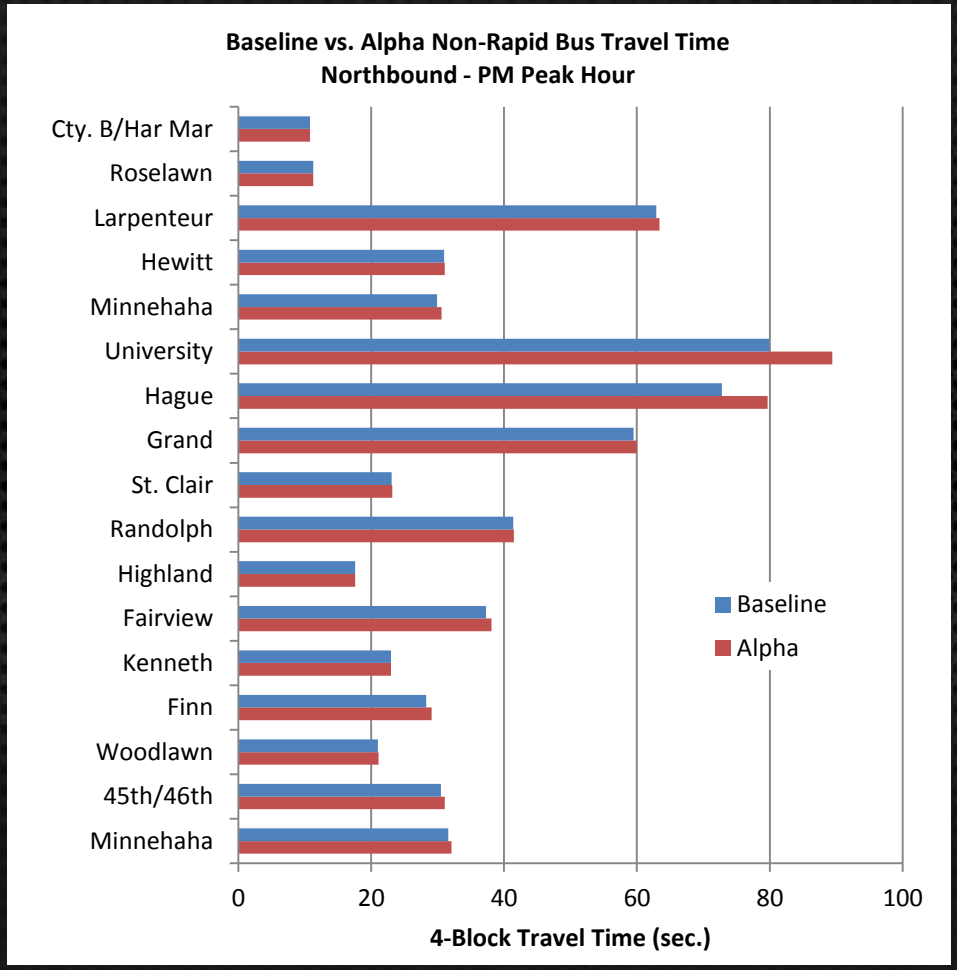
SRF

TSP Assumptions

- Unconditional
- LRT Interaction
- Max Green Reduction
- Early + Extended Green

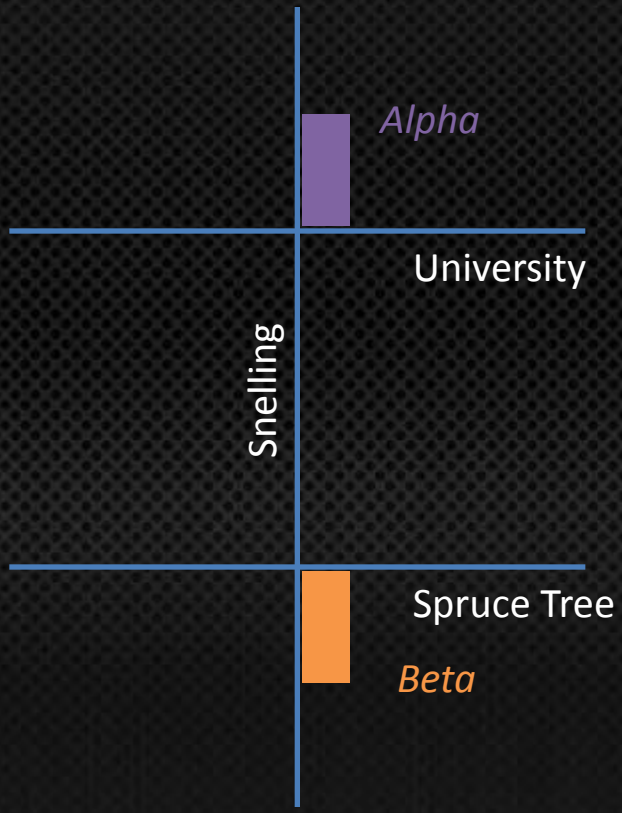
VISSIM Results: Q1 - Traffic Impacts

- MOEs:
  - Level of Service
  - Travel time for non-Rapid Bus vehicles
- Baseline vs. Alpha
  - AM Peak Hour
    - No impact
  - PM Peak Hour
    - University
    - Hague



VISSIM Results: Q1 - Traffic Impacts

- Alpha vs. Beta: NB University



VISSIM Results: Q1 - Traffic Impacts

- Alpha vs. Beta: NB University

Scenario	Platform Type	Station Length (ft.)	Dwell Time (sec.)
Rapid Bus Alpha	Bumpout	80	21
Rapid Bus Beta	Curbside	80	21

- Level of Service:

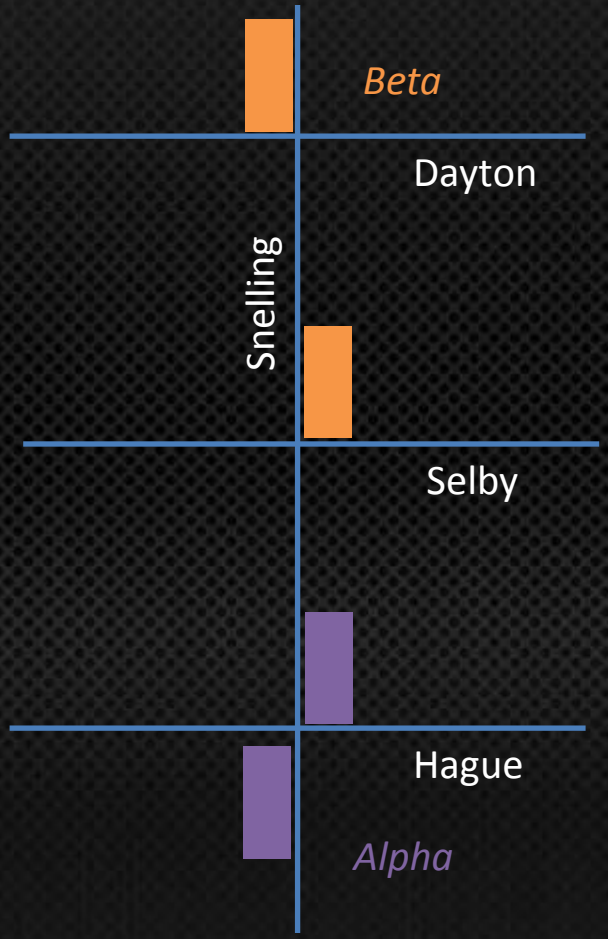
Signalized Intersection	PM Peak Hour Average Delay Per Vehicle		
	Baseline	Alpha	Beta
University Avenue	71.9	76.2	74.3
Spruce Tree Avenue	29.6	34.1	29.1

- Travel Time:

Rapid Bus Station	Direction	PM Peak Hour Average Travel Times		
		Baseline	Alpha	Beta
University Avenue	Northbound	79.9	89.4	78.2

VISSIM Results: Q1 - Traffic Impacts

- Alpha vs. Beta: Hague



VISSIM Results: Q1 - Traffic Impacts

- Alpha vs. Beta: NB Hague

Scenario	Platform Type	Station Length (ft.)	Dwell Time (sec.)
Rapid Bus Alpha	Bumpout	80	7
Rapid Bus Beta	Bumpout	80	7

- Alpha vs. Beta: SB Hague

Scenario	Platform Type	Station Length (ft.)	Dwell Time (sec.)
Rapid Bus Alpha	Bumpout	80	7
Rapid Bus Beta	Bumpout	80	7

VISSIM Results: Q1 - Traffic Impacts

- Alpha vs. Beta: Hague

- Level of Service:

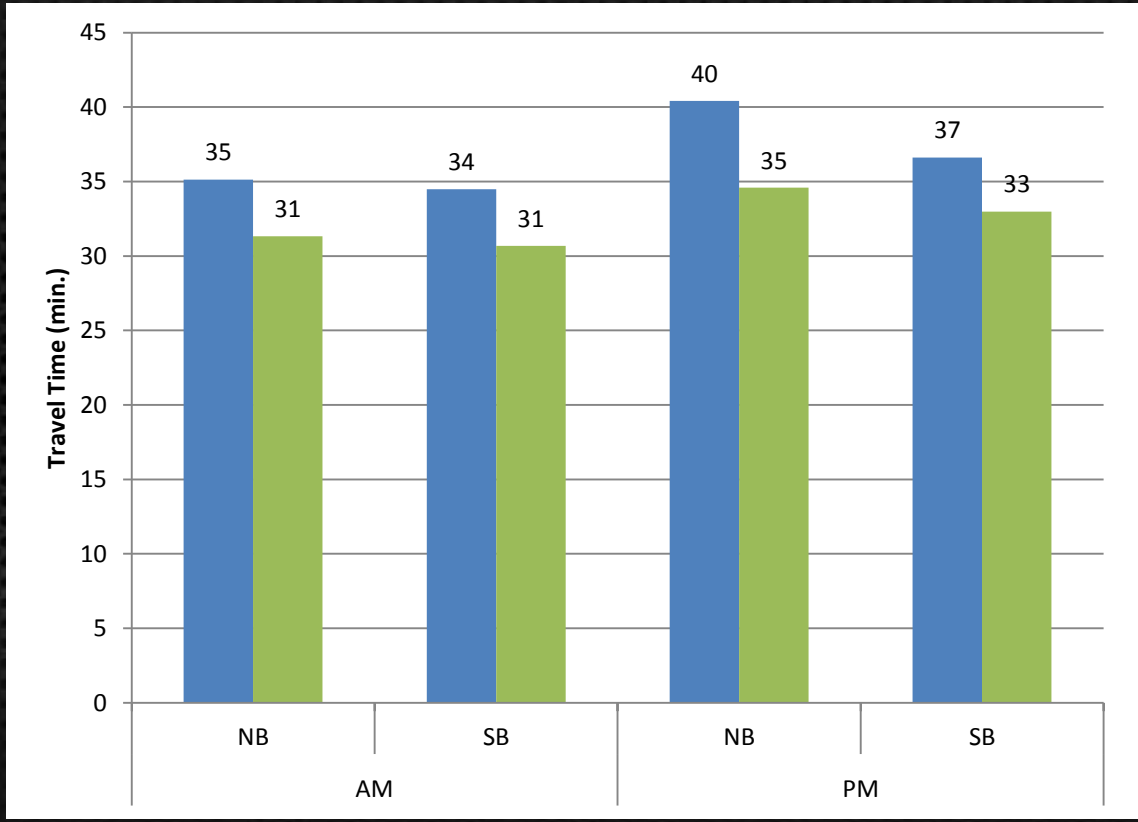
Signalized Intersection	PM Peak Hour Average Delay Per Vehicle		
	Baseline	Alpha	Beta
Marshall Avenue	49.3	52.1	50.8
Selby Avenue	36.9	40.1	42.5

- Travel Time:

Rapid Bus Station	Direction	PM Peak Hour Average Travel Times		
		Baseline	Alpha	Beta
Hague Avenue	Northbound	72.8	79.7	84.8
	Southbound	39.3	39.7	40.3

VISSIM Results: Q2 - TSP

- Rapid Bus Refined vs. Rapid Bus Refined with TSP
- 10-14% travel time reduction for Rapid Bus



VISSIM Results: Q2 - TSP

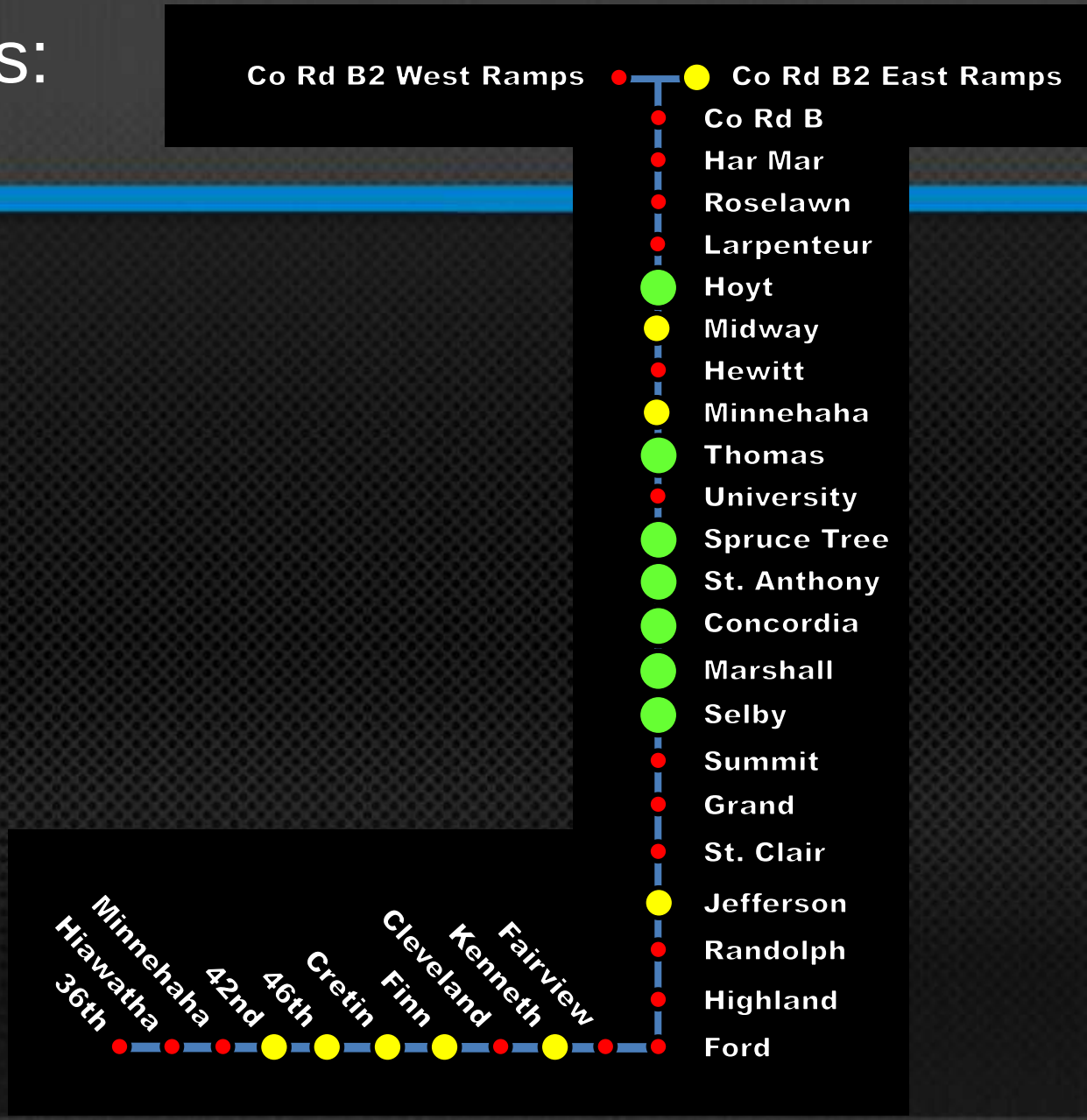
- Average Vehicle Delay vs. Person-Delay
- Differences due to:
  - Signal timing
  - Congestion

Change in Person-Delay with TSP (in hours)			
No.	**Signalized Intersection**	**AM**	**PM**
1	County Road B2 at Snelling Avenue West Ramps	21	704
2	County Road B2 at Snelling Avenue East Ramps	54	(122)
3	Snelling Avenue at County Road B	(1,592)	5,200
4	Snelling Avenue at Har Mar Mall	555	360
5	Snelling Avenue at Roselawn Avenue	71	2,167
6	Snelling Avenue at Larpenteur Avenue	2,946	9,915
7	Snelling Avenue at Hoyt Avenue	(11)	(7,334)
8	Snelling Avenue at Midway Parkway	(36)	(1,305)
9	Snelling Avenue at Hewitt Avenue	188	(3)
10	Snelling Avenue at Minnehaha Avenue	179	(295)
11	Snelling Avenue at Thomas Avenue	(400)	(9,317)
12	Snelling Avenue at University Avenue	(286)	25,778
13	Snelling Avenue at Spruce Tree Avenue	(834)	(25,321)
14	Snelling Avenue at St Anthony Avenue (I-94 North Ramps)	(748)	(5,602)
15	Snelling Avenue at Concordia Avenue (I-94 South Ramps)	1,276	(7,416)
16	Snelling Avenue at Marshall Avenue	(7,604)	(8,869)
17	Snelling Avenue at Selby Avenue	(13,872)	(7,843)
18	Snelling Avenue at Summit Avenue	149	5,439
19	Snelling Avenue at Grand Avenue	783	2,415
20	Snelling Avenue at St. Clair Avenue	456	788
21	Snelling Avenue at Jefferson Avenue	86	(204)
22	Snelling Avenue at Randolph Avenue	805	602
23	Snelling Avenue at Highland Parkway	133	10
24	Snelling Avenue at Ford Parkway	126	134
25	Ford Parkway at Fairview Avenue	28	2
26	Ford Parkway at Kenneth Street	7	(28)
27	Ford Parkway at Cleveland Avenue	110	1,941
28	Ford Parkway at Finn Street	(23)	(76)
29	Ford Parkway at Cretin Avenue	(3)	(61)
30	46th Street at 46th Avenue	(40)	(25)
31	46th Street at 42nd Avenue	(185)	(298)
32	46th Street at Minnehaha Avenue	(34)	2,317
33	TH 55 (Hiawatha Avenue) at 46th Street	41	35
34	46th Street at 36th Avenue	3	11

SRF

VISSIM Results: Q2 - TSP

- Strong net benefit at 7 intersections
- Net benefit at 9 additional intersections



VISSIM Animation

- Northbound PM with TSP
- Southbound PM with TSP

Findings and Recommendations

- Traffic Impact:
  - No substantial traffic impact at 18/20 stations
  - University: greater traffic impact with farside University bumpout
  - Hague: greater traffic impact with stations farther north
- TSP:
  - Implement at intersections with net benefit
  - Prioritize install at high-benefit locations
  - Consider implementing using a less aggressive green time reduction practice at remaining intersections
  - Add vehicle and pedestrian detection

Snelling BRT

DESIGN CONTRACT SCOPE

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Other Progress

- $10.2 million TIGER V Application submitted
  - $474 million available
  - 576 applications, $9 billion in requests
  - Expect notification Fall 2013
- May 31 SPOC (Policy) meeting
  - SPOC to be engaged in station design/integration with surrounding streetscape
  - Discussion of brand elements, directed additional research to determine brand name

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Next Steps

- Open Houses
  - July 9, 5:30–7:30 p.m. at Hamline University
  - July 15, 5:00–7:00 p.m. at Hillcrest Rec Center
  - July 17, 12:30–2:30 p.m. at Macalester College
- TAC Meeting #3:
  Thursday, July 18
  1:30 to 3:30 pm
  Metro Transit FTH Chambers
  (560 6th Ave N, Minneapolis)

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Proposed Future TAC Meetings

- Third Thursday of the month, 1:30 to 3:30 p.m. Metro Transit FTH Chambers (560 6th Ave N, Mpls)

2013

Thursday, Jul 18, 1:30–3:30

Thursday, Aug 16, 1:30–3:30

Wednesday, Sep 18, 1:30–3:30

Thursday, Oct 17, 1:30–3:30

Thursday, Nov 21, 1:30–3:30

Thursday, Dec 19, 1:30–3:30

2014

Thursday, Jan 16, **1:00–2:30**

Thursday, Feb 20, 1:30–3:30

Thursday, Mar 20, 1:30–3:30

Thursday, Apr 17, 1:30–3:30

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