

North Avenue Corridor Study

Transportation, Energy and
Utilities Committee

September 10, 2014



**PARSONS
BRINCKERHOFF**

Presentation Outline

- **Project Initiation: Why North Avenue?**
- **Existing Conditions + Issues**
- **Vision + Goals**
- **Improvement Options - *Development /Evaluation***
- **Implementation Plan - *Recommended Concepts***
- **Action**

Corridor Study Origin

2011 Transportation Plan

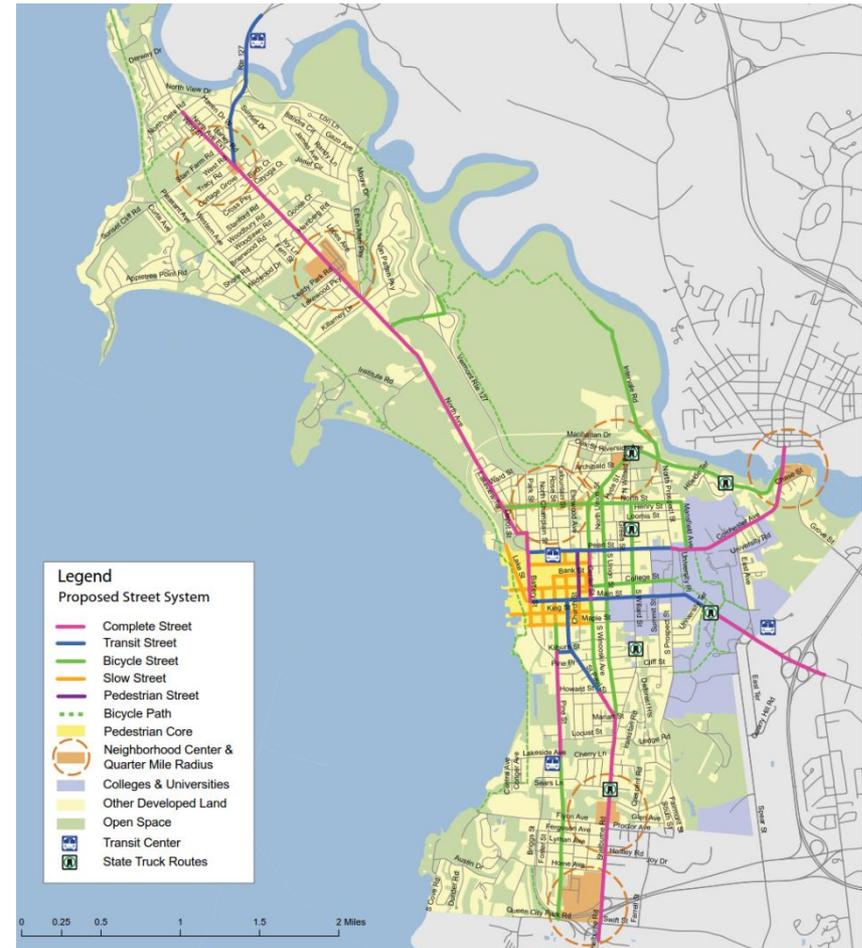
“...A shift to a complete streets strategy...

Burlington’s gateway streets must carry all travel modes – cars and trucks, buses, bikes, and pedestrians - because no alternatives exist...

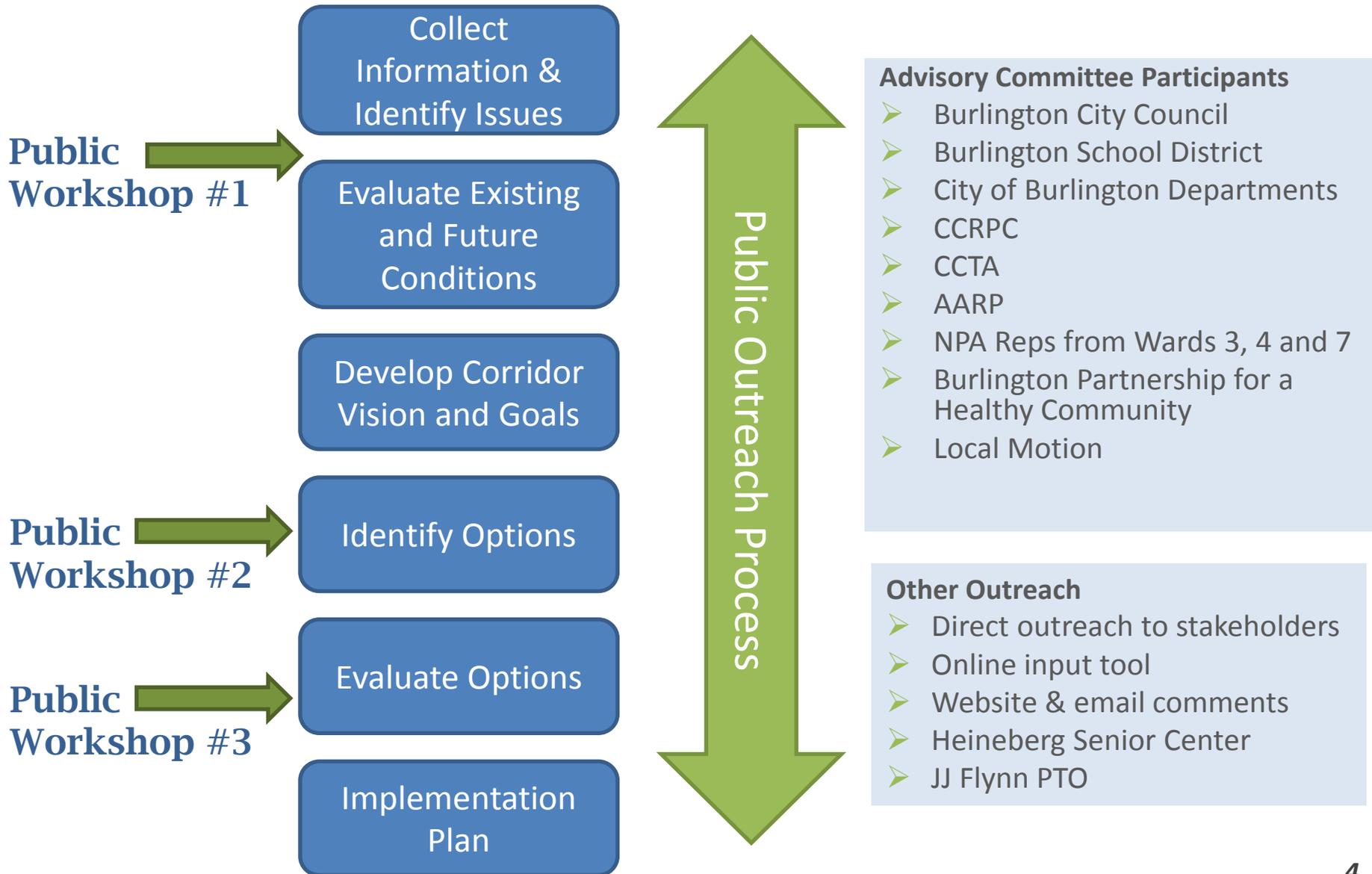
The only essential element of a complete street is accommodating all travel modes safely and efficiently.”

Implementation through Corridor Studies:

1. 2009 Battery Street (preliminary analysis)
2. 2011 Colchester Avenue
3. 2013 North Avenue
4. 2014 Winooski Avenue
5. Battery Street and Shelburne Street TBD

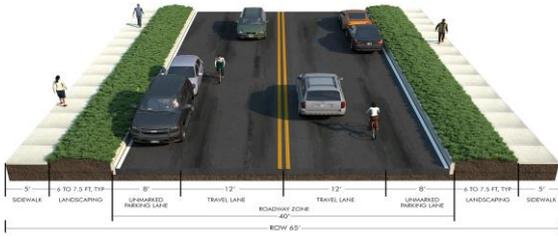


Corridor Study Process



Corridor Conditions & Issues

Existing Conditions



**Plattsburg Ave
to Shore Rd**



**Washington St
to North St**

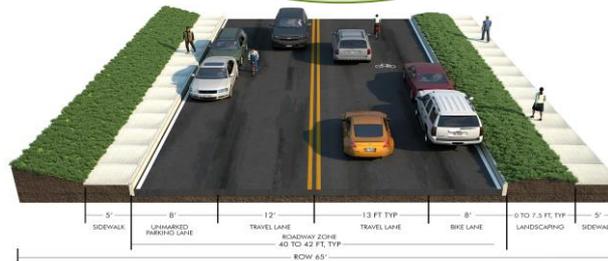


**Shore Rd
to VT 127**

- 66' ROW, but constrained
- Sidewalks throughout, but poor condition and few crossings
- Inconsistent bike facilities, limited connections to paths
- Single family + multi-family + scattered retail + institutions
- Frequent driveways
- CCTA Route 7
- Unclear parking
- Skewed intersections, high-speed right turns



**Institute Rd
to Washington St**



**VT 127
to Institute Rd**

Average Daily Traffic Volumes + Future Growth



High Crash Locations (2006-2010)

Birch Ct to Woodbury Rd

Crashes: 39
PDO: 33 (85%)
Crash Rate: 6.48 per MVM
Actual/Critical Ratio: 1.23
Severity Index: \$21,677

Gosse Ct/Woodlawn Rd to Poirer Pl

Crashes: 46
PDO: 42 (91%)
Crash Rate: 6.18 per MVM
Actual/Critical Ratio: 1.22
Severity Index: \$13,100

Lakewood Pkwy to Ethan Allen Pkwy

Crashes: 76
PDO: 60 (79%)
Crash Rate: 10.16 per MVM
Actual/Critical Ratio: 2.00
Severity Index: \$41,204

Strong St/Ward St to Sherman St

Crashes: 58
PDO: 4 (93%)
Crash Rate: 9.51 per MVM
Actual/Critical Ratio: 1.81
Severity Index: \$12,107



Legend

- High Crash Segment
- Principal Highways
- North Ave
- Streets
- Railroads
- Island Line Trail
- Burlington

High Crash Locations

Data Source: VTrans (2006-2010)
Updated: September 16, 2013



0 0.25 0.5 1 Miles

Vision & Goals

Vision Statement for North Avenue*

North Avenue will continue to serve as the primary transportation corridor connecting Burlington's New North End with the rest of the City.

As the North End's "Main Street," North Avenue will provide for safe, inviting, and convenient travel for all users of all ages and abilities—including motorists, pedestrians, bicyclists, and public transportation riders.

The need to move people through the corridor will be balanced with the need to provide access to homes, businesses, and local institutions.

The corridor will develop into an attractive public space through creative streetscape, signage, and other site design features.

The corridor will become more livable and desirable by promoting social interaction, public health, economic development and environmentally sustainable initiatives.

Major Goals for North Avenue

- Remake the North Ave corridor into a “Complete Street” that accommodates the safe and efficient travel for all users of all abilities and provides transportation choices.
- Improve safety for all users.
- Provide a range of convenient and efficient travel options and improve multimodal connections.
- Develop strategies that support vibrant and livable neighborhoods in the New North End; enhance the quality of life of residents and visitors; and support sustainable economic growth.

Concept Development

Initial Universe of Improvement Options

■ Intersection treatments

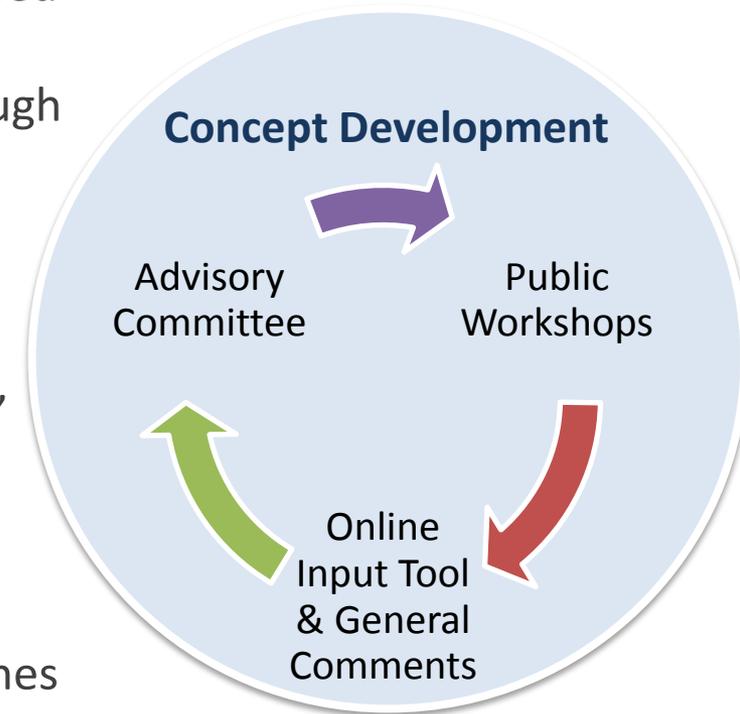
- ❑ Signal improvements, re-alignment, high speed turn elimination, and/or roundabouts
- ❑ Improved pedestrian and bicycle travel through intersections

■ Travel lane, parking and bicycle-related treatments

- ❑ Lane width reductions, travel lane reduction, turn lane creation, and/or lanes for bicycle travel
- ❑ On-street parking on one side, both sides, and/or removed
- ❑ Designated bike facilities: Sharrows / bike lanes (regular, buffered, or protected)

■ Pedestrian facilities

- ❑ Crosswalks, pedestrian signal improvements, and/or gateway treatments



Improvement Options

Cross Sections:

- Short-Term Improvements
- Medium- to Long-Term Options

Intersections:

- Plattsburg Ave
- Shore Rd/Heineberg Rd
- Ethan Allen Shopping Center
- Ethan Allen Pkwy
- VT 127 Ramps
- Institute Rd
- North St

Short, Medium, & Long Term Implementation

- Short term = minimal design; completion within 1-3 years; basic improvements to advance without additional public process (e.g. signal timing, ADA improvements)
- Medium term = design needed; completion within 3-7 years; public process included in design process
- Long term = evaluation, scoping and design needed; completion is more than 7 years; robust public involvement

Evaluation Criteria

- Evaluation criteria based on **study goals**:
 - Accommodates safe & efficient travel for all users
 - Improves safety for all users
 - Balances transportation choices
 - Improves multimodal connectivity
- Other goals informed the improvement options development as **design criteria**:
 - Consistent facilities throughout corridor
 - Supports vibrant and livable community
 - Supports sustainable economic growth

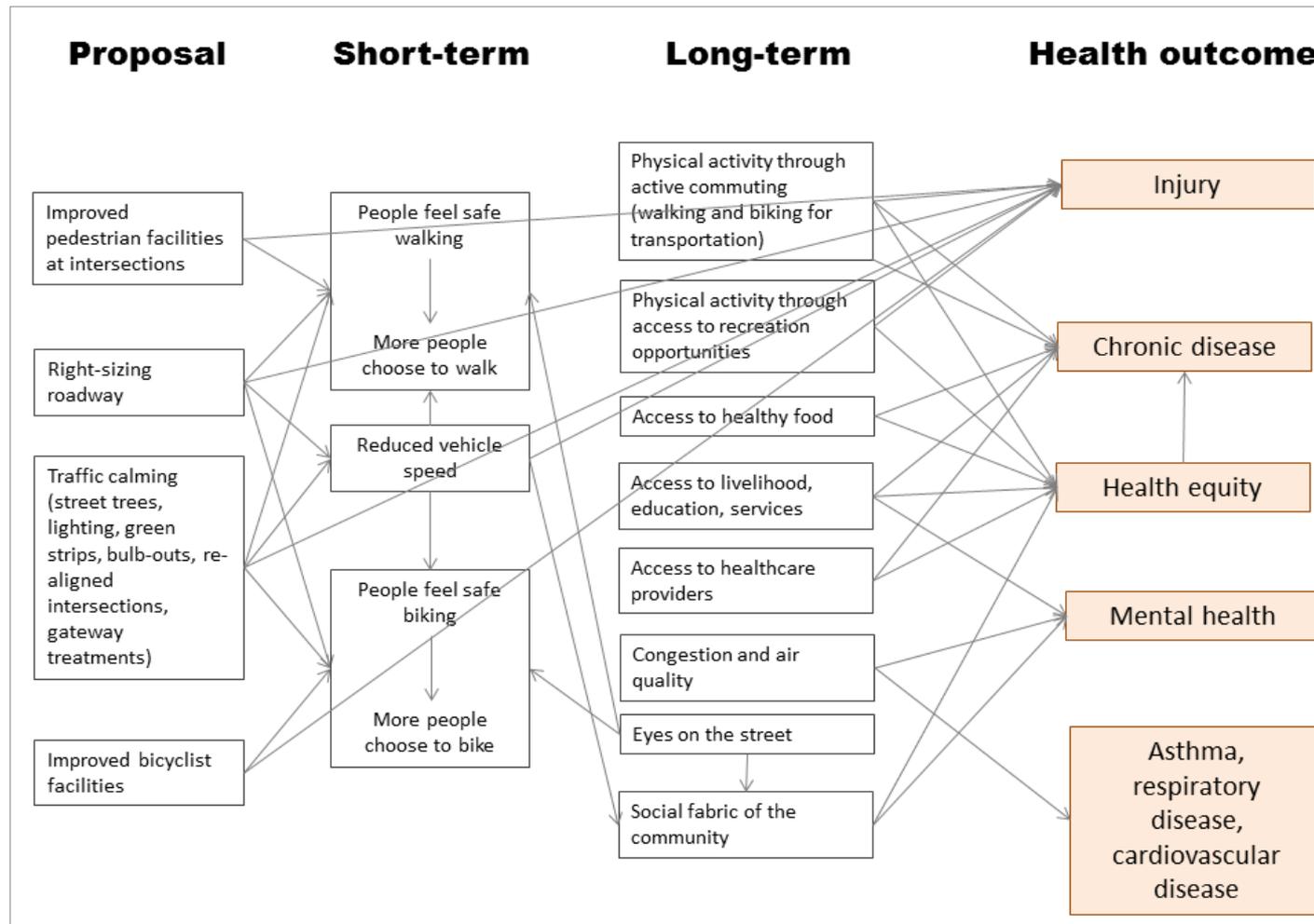
Evaluation Criteria

Criteria	Cross Sections	Intersections
Consistency with <i>Burlington Complete Street Design Guidelines</i>	✓	
Opportunities to improve accessibility	✓	✓
Vehicle speed reduction treatments	✓	✓
Level of traffic stress	✓	✓
Vehicle/bike conflicts	✓	✓
Bus/bike conflicts	✓	
Vehicle delay/level of service		✓
Vehicle queues		✓
Bus stop/crosswalk pairing	✓	
Opportunities for bus bulbs	✓	
Cyclist access	✓	
New ROW needs	✓	✓
Planting strip impacts	✓	✓
Snow plowing and storage	✓	
Drainage	✓	

Health Impact Assessment

What are the potential health impacts of proposed changes to North Avenue?

Which proposals have the most potential to improve the health of vulnerable populations?



Implementation Plan

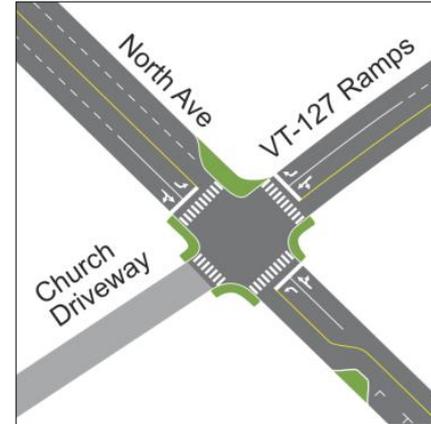
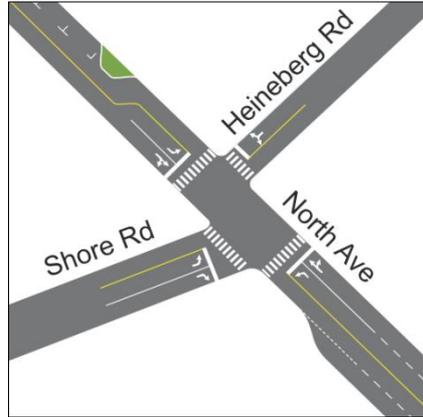
(Recommended Concepts)

Short-Term Concepts

- All intersections
 - ADA-compliant curb ramps and crosswalks on all approaches;
 - audible pedestrian countdown timers with a minimum 5-second (push-button) Leading Pedestrian Interval (LPI); and
 - bicycle facilities maintained through intersections (where provided in advance of intersections).
- New crosswalks:
 - Burlington College
 - Gosse Court
 - Killarney Drive / Village Green Drive
 - Green Acres / Cayuga Court

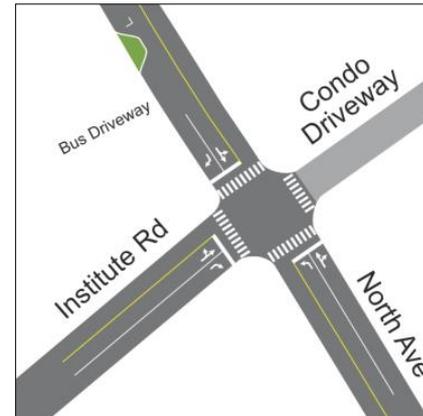
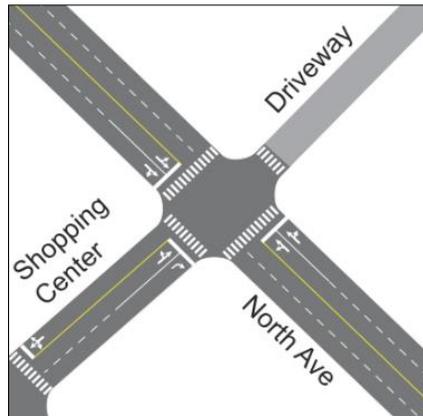
Short-Term Intersection Concepts

Shore Road:
increase pedestrian crossing times, split phasing, pedestrian-activated no right turn on red.



VT 127: remove high-speed northbound and westbound ramps

Ethan Allen Shopping Center:
increase pedestrian crossing times, pedestrian-activated no right turn on red.



Institute Road:
reduce intersection footprint, relocate northbound bus shelter, realign southbound sidewalk, pedestrian-activated no right turn on red

VT 127 Intersection

Concept	AM/PM Cycle Length (seconds)	LOS (NB/SB/EB/WB)								Average Queue (NB/SB/EB/WB in terms of # of Vehicles)							
		AM Peak				PM Peak				AM Peak				PM Peak			
Existing Configuration (Existing traffic volumes)	70/70	F	E	B	C	B	B	B	A	17	12	1	3	3	1	1	1
3-Lane Conversion <ul style="list-style-type: none"> Maintain existing geometry (including NB right-turn ramp and unrestricted WB right-turn) Optimize signal timing 	90/90	D	C	C	C	B	A	C	A	13	9	1	4	8	2	1	1

Existing Configuration (2035 traffic volumes)	70/70	F	E	B	C	B	B	B	A	21	16	1	4	4	1	1	1
Concept 1 (4 Lanes) <ul style="list-style-type: none"> 5-second LPI Remove high-speed NB/WB rights 	90/90	C	D	C	C	D	C	C	C	12	15	1	3	21	6	1	6

Note: high-speed ramp removal + LPI creates LOS improvement in NB AM peak because NB exclusive left turn lane is added. Without exclusive NB left turn LOS changes from C to E.

**more recent analysis indicates improved LOS; results to be updated as soon as possible*

LOS	Signalized Intersection
A	≤10 sec
B	10–20 sec
C	20–35 sec
D	35–55 sec
E	55–80 sec
F	≥80 sec

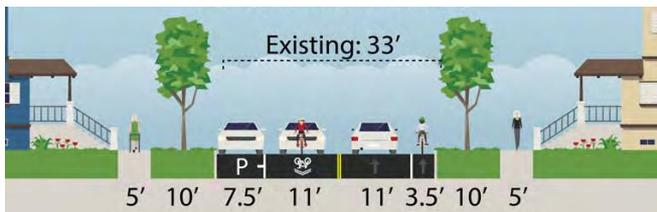
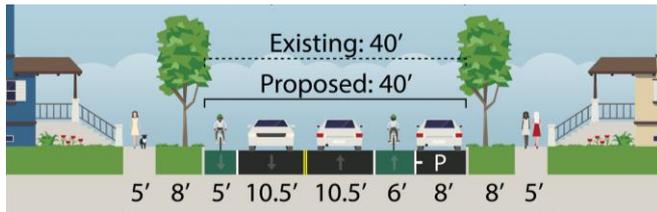
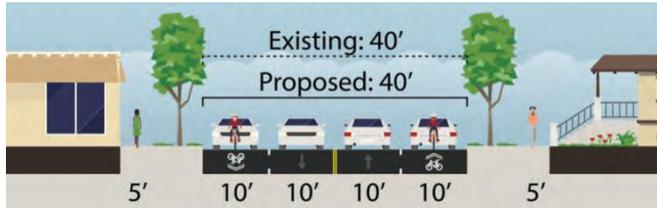
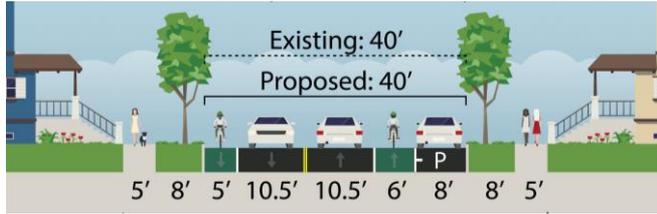
VT 127 Traffic Simulations

2035 AM/PM

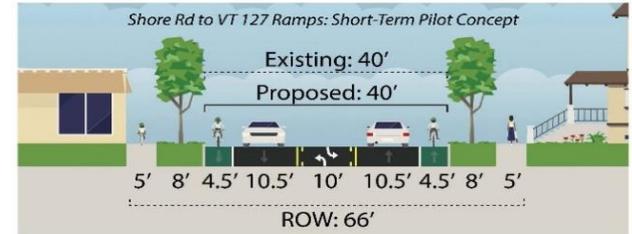
4 lanes / 3 lanes

Short-Term Cross-Sections - 2 Concepts

Study Team - Concept 1



Advisory Committee - Concept 2



Short-Term Cross-Section Concept Differences

Major Differences between Concepts 1 and 2:

Parking

- Concept 1: parking on one side (except between Shore Rd and VT 127)
- Concept 2: no parking north of Institute Rd

Lane reassignment between Shore Rd and VT 127

- Concept 1: medium-term implementation of 4- to 3-lane pilot project
- Concept 2: short-term implementation of 4- to 3-lane pilot project

Bike Facilities

- Concept 1: short-term on-street bike lanes (except between Shore Rd and VT 127)
- Concept 2: short-term on-street buffered/protected bike lanes north of Institute Rd

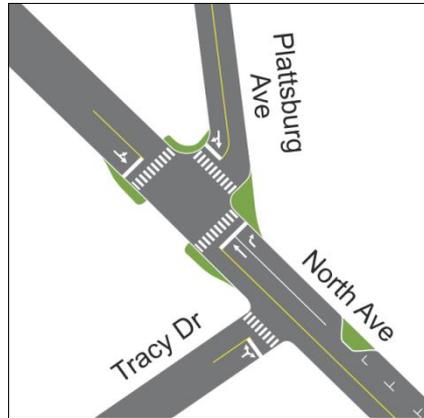
Speed Limit

- Concept 1: No change in the short-term
- Concept 2: Implement 25 mph north of VT 127

Medium-Term Intersection Concepts

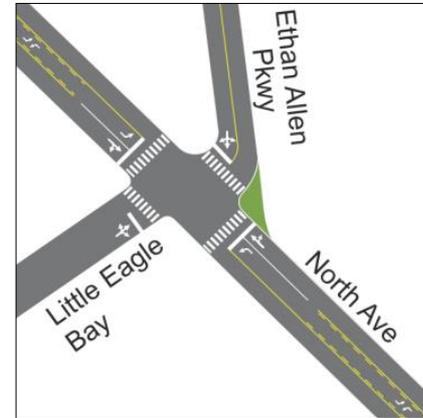
Plattsburg Avenue:

eliminate high-speed northbound right turn, add pedestrian activated no right on red.



Ethan Allen Parkway:

scoping to relocate Park entrance, add Little Eagle Bay into signal, eliminate high-speed northbound right turn.



Shore Road:

if ROW is donated or easily acquired, realign Shore Road, keep longer crossing times and pedestrian-activated no right on red.



North Street:

parking lot right in / right out or curb cut removal, realign north and south crosswalks, add protected / permitted southbound left turns, pedestrian-activated no right turn on red

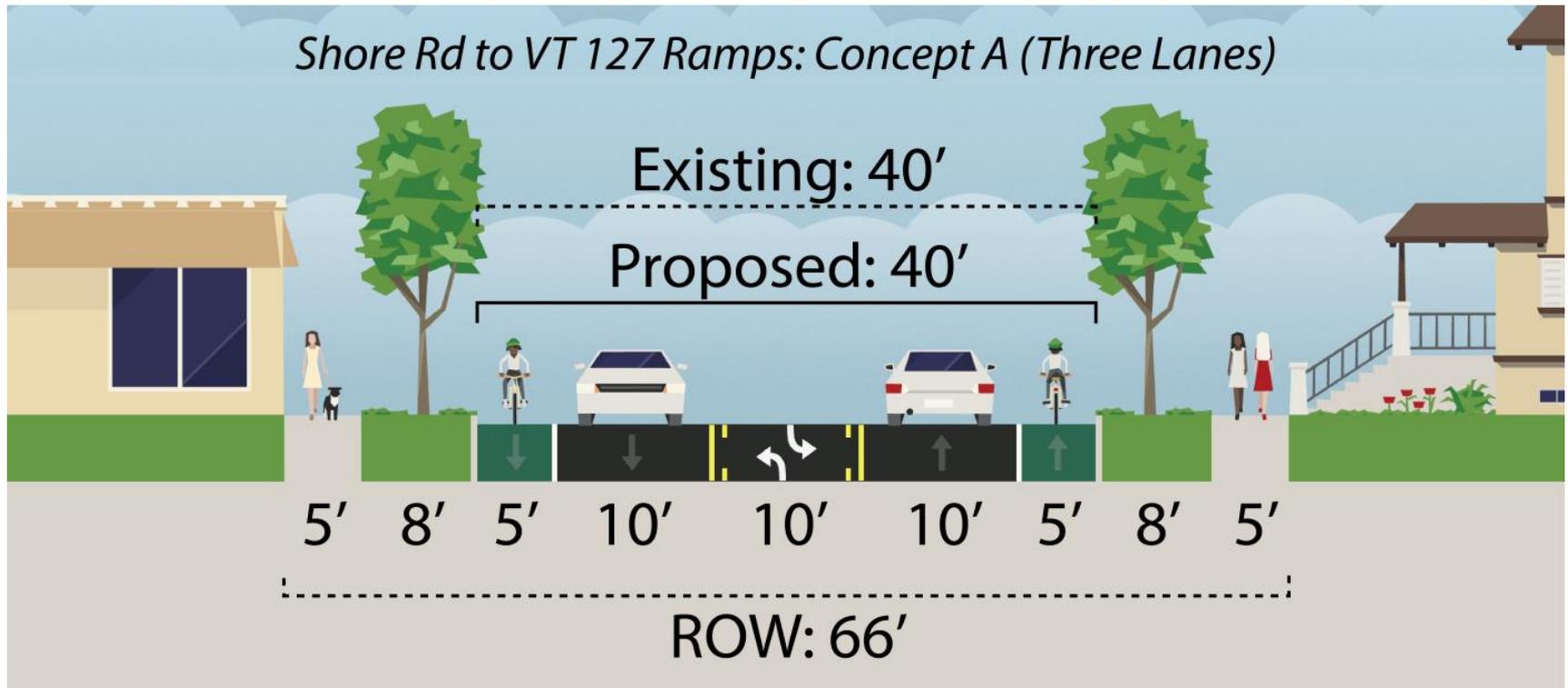


Medium-Term crosswalks

- **Washington Street:** raised intersection
- **Potential crosswalks** for medium-or long-term:
 - Ward Street
 - Saratoga Avenue
 - Poirier Place
 - Loaldo Drive
 - Lakewood Parkway
 - Staniford Road
 - Mid-block between VT 127 and Institute Road
 - Convent Square
 - Canfield Street

Medium-Term Cross-Section Concepts

Study Team's Recommendation: 4- to 3-lane pilot project in medium-term

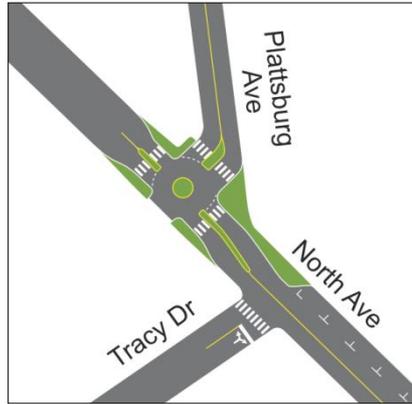


New Information

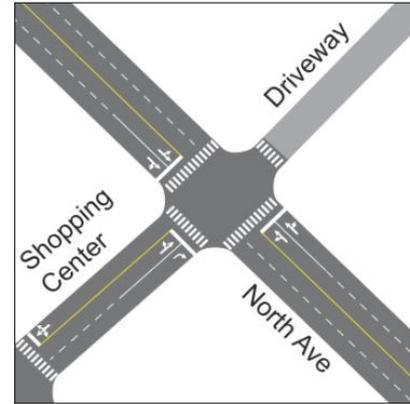
This concept could move into the short-term implementation plan, pending an intensive public outreach effort and comprehensive data collection plan (e.g. traffic speeds, travel times, turning movements, bike/ped counts, crash incidents, public perception)

Long-Term Intersection Concepts

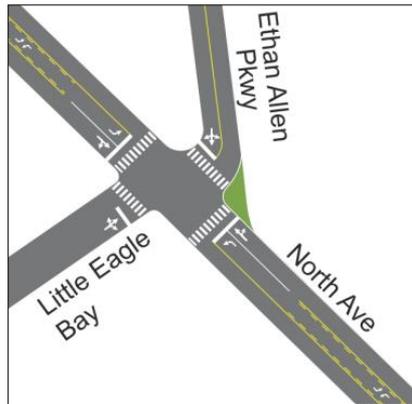
Plattsburg Avenue:
scoping for single-lane mini-roundabout



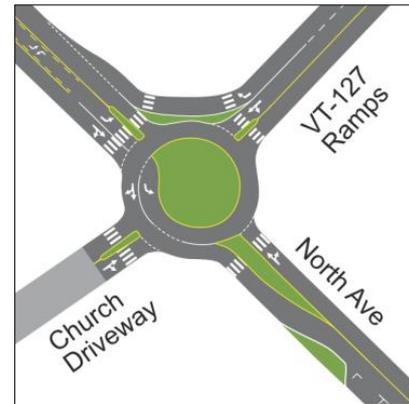
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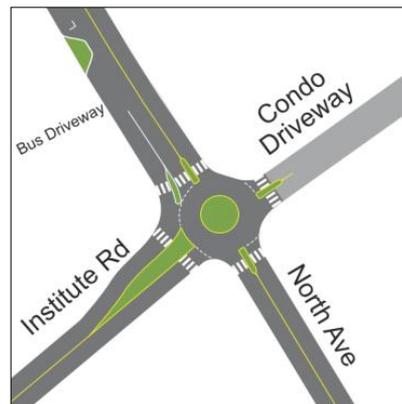
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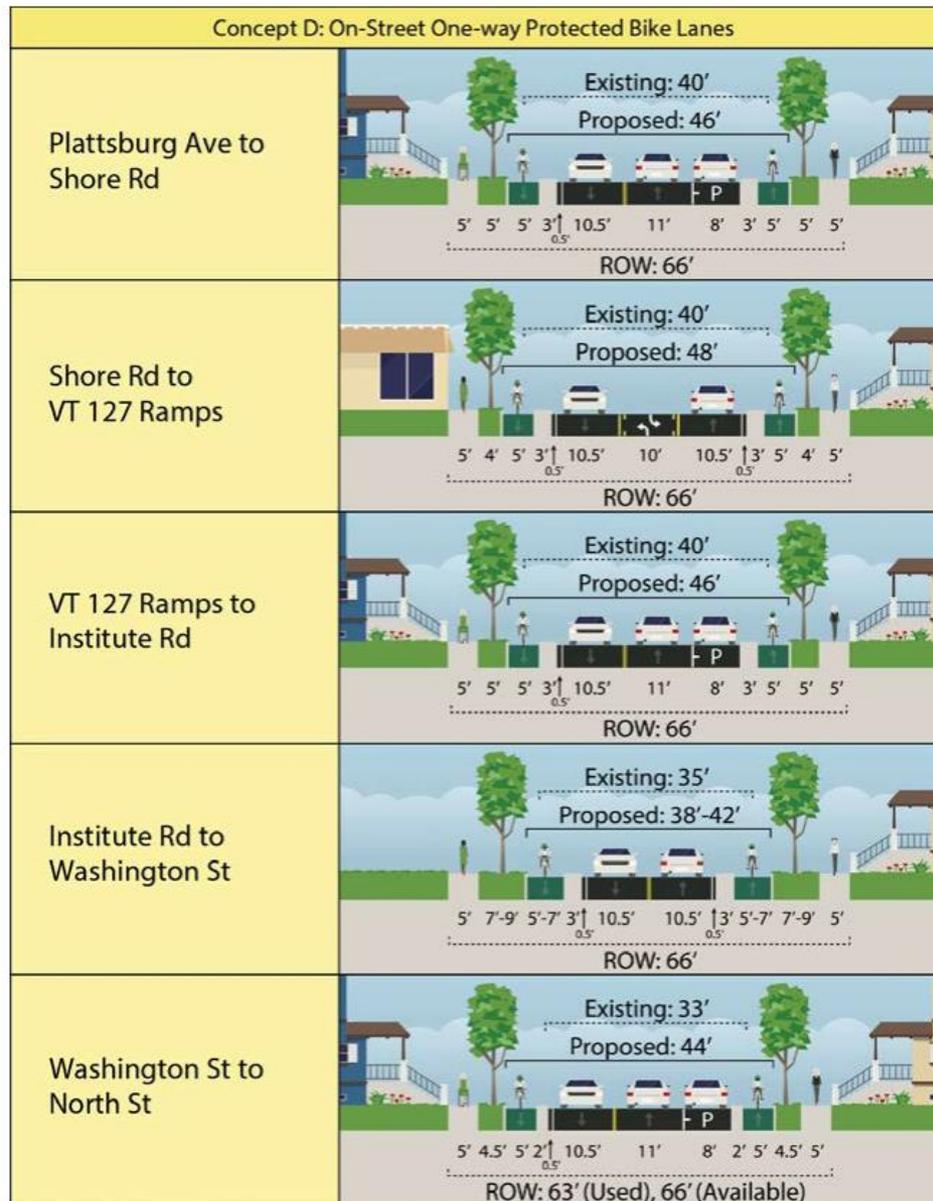
VT 127: scoping study for roundabout



Institute Road:
roundabout, resolve bus driveway



Long-Term Cross Sections Concept



High-Level Cost Estimates

Concept	Estimated Costs
4- to 3-lane pilot: Planning + implementation	\$52,000
Short Term: Basic – Enhanced Crosswalks Intersections’ minor reconstruction Buffered / protected bike lanes	\$25,000 - \$110,000 \$70,000 \$60,000
Medium Term: Basic – Enhanced Crosswalks Intersections	\$45,000 - \$180,000 TBD with scoping study
Long Term cross section: On-Street One-Way Protected Bike Lanes	\$7,479,000

Creating a Corridor Plan

- Implementation Plan / Implementation Matrix
 - Chapter 4 of Corridor Plan
- Corridor Plan
 - Chapters & Appendices
 - Corridor Study Process/Background
 - Vision & Goals
 - Existing & Future Conditions
 - Development & Evaluation of Improvement Options
 - Implementation Plan / Matrix
 - Public Process
 - Health Impact Assessment (Full Report)

TEUC Action

Decisionmaking

The Transportation, Energy and Utilities Committee is asked to approve a North Avenue *Implementation Plan* (or elements of the Plan) and advance the final draft to the City Council for consideration and approval at the September 22, 2014 meeting.

Approving the Implementation Plan

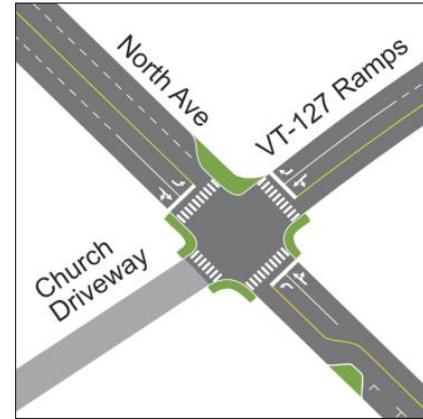
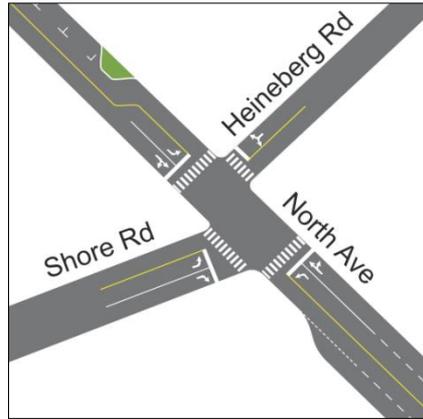
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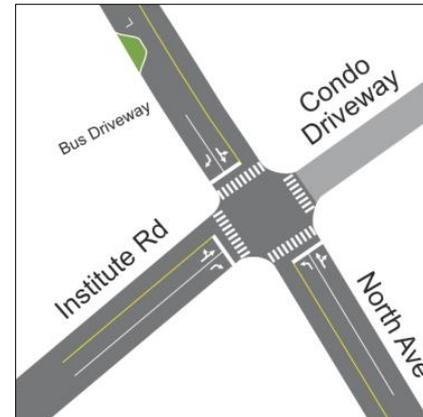
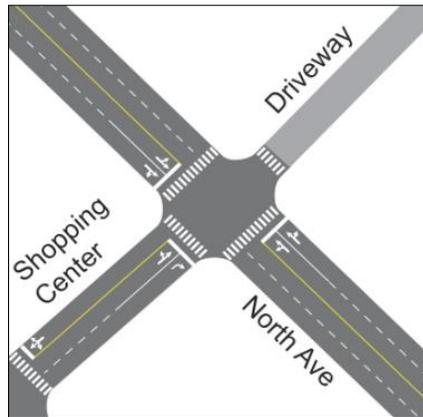
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Approving the Implementation Plan

Short Term Implementation?

- Cross sections:
 1. 4- to 3- lane pilot project between Shore Road and VT 127?
 2. On street parking north of Institute Road?
 3. 25 mph speed limit?

Approving the Implementation Plan

Medium Term Implementation?

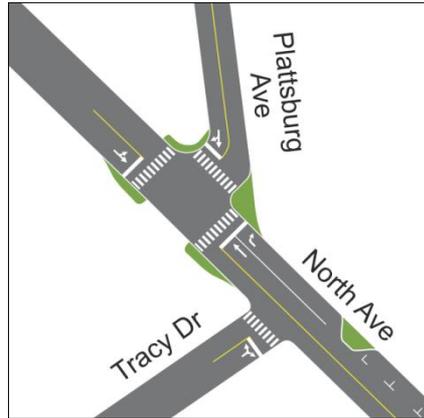
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Medium Term Implementation?

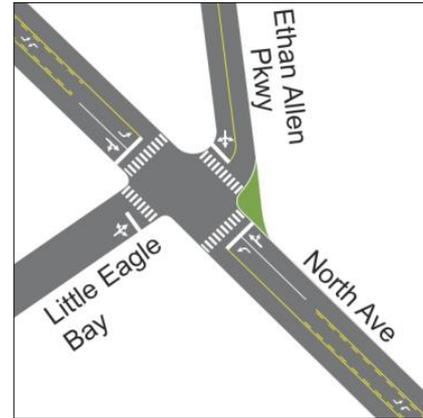
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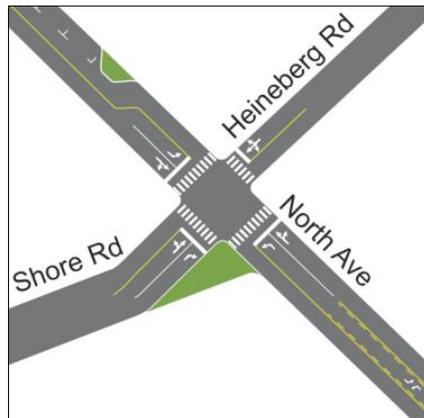
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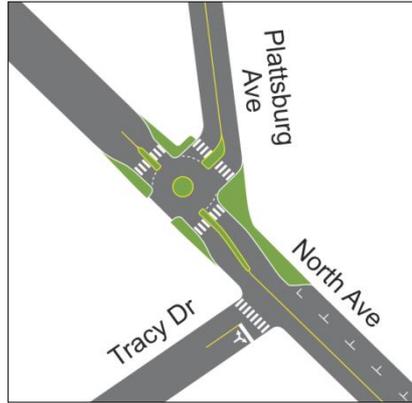
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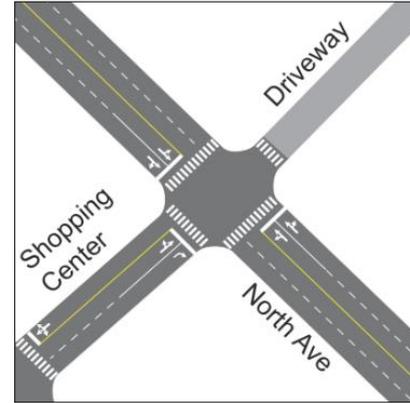


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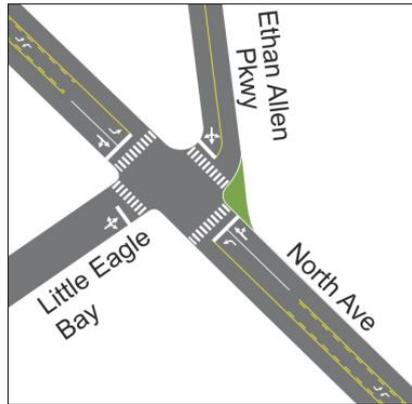
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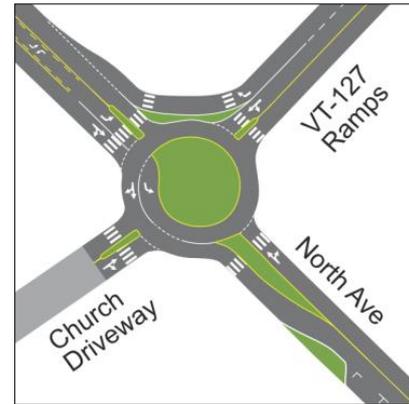
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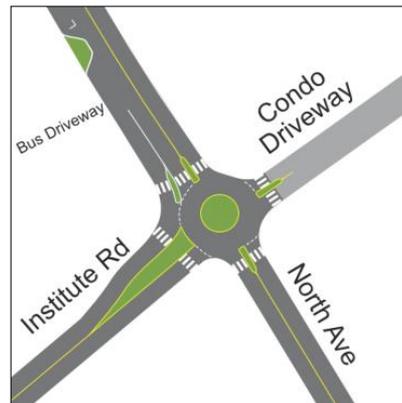


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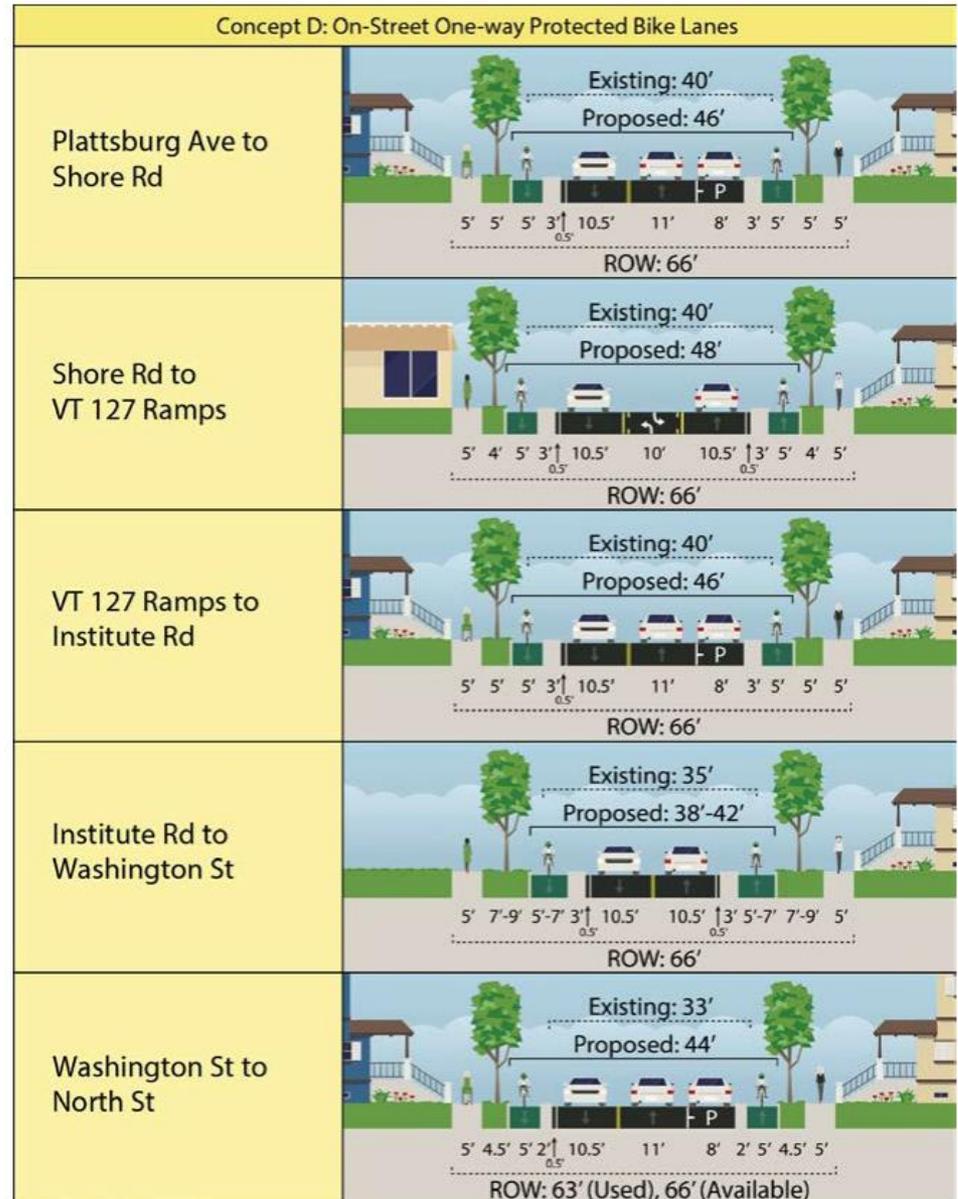
Long Term Implementation?

Institute Road: roundabout, resolve bus driveway



Approving the Implementation Plan

Long Term Implementation?



Resources

- Project website: <http://www.bit.ly/north-ave>
 - [Vision and Goals](#) – Full text
 - [Existing and Future Conditions Report](#)
 - [Draft Implementation Plan](#)
 - [Public meeting](#) agendas, meeting notes, and presentations
 - [Advisory Committee](#) agendas, meeting notes, and presentations
 - ***North Avenue Corridor Plan: Posted by September 15th***

Thank You!