North Avenue Corridor Study

Transportation, Energy and Utilities Committee

September 10, 2014
Presentation Outline

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

Public Workshop #1
- Collect Information & Identify Issues
- Evaluate Existing and Future Conditions
- Develop Corridor Vision and Goals

Public Workshop #2
- Identify Options
- Evaluate Options

Public Workshop #3
- Implementation Plan

Advisory Committee Participants
- Burlington City Council
- Burlington School District
- City of Burlington Departments
- CCRPC
- CCTA
- AARP
- NPA Reps from Wards 3, 4 and 7
- Burlington Partnership for a Healthy Community
- Local Motion

Other Outreach
- Direct outreach to stakeholders
- Online input tool
- Website & email comments
- Heineberg Senior Center
- JJ Flynn PTO
Corridor Conditions & Issues
Existing Conditions

- **Plattsburg Ave to Shore Rd**
  - 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

- **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

- **VT 127 to Institute Rd**
  - 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

- **Washington St to North St**
  - 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**
  - 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
Average Daily Traffic Volumes + Future Growth

- 6,600 + 5% growth
- 10,800
- 13,700 + 10% growth
- 19,100
- 7,700 + 5% growth
- 12,000 + 15% growth
- 19,100
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
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.

*modified from 2012 EPA’s Building Blocks for a Sustainable Community Workshop, Complete Streets Vision for Burlington
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 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

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

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

**VT 127:**
remove high-speed northbound and westbound ramps

**Institute Road:**
reduce intersection footprint, relocate northbound bus shelter, realign southbound sidewalk, pedestrian-activated no right turn on red
# VT 127 Intersection

## LOS Signalized Intersection

<table>
<thead>
<tr>
<th>Concept</th>
<th>AM/PM Cycle Length (seconds)</th>
<th>LOS (NB/SB/EB/WB)</th>
<th>Average Queue (NB/SB/EB/WB in terms of # of Vehicles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Configuration (Existing traffic volumes)</td>
<td>70/70</td>
<td>F E B C B B B A</td>
<td>17 12 1 3 3 1 1 1</td>
</tr>
<tr>
<td>3-Lane Conversion</td>
<td>90/90</td>
<td>D C C C B A C A</td>
<td>13 9 1 4 8 2 1 1</td>
</tr>
<tr>
<td>Existing Configuration (2035 traffic volumes)</td>
<td>70/70</td>
<td>F E B C B B B A</td>
<td>21 16 1 4 4 1 1 1</td>
</tr>
<tr>
<td>Concept 1 (4 Lanes)</td>
<td>90/90</td>
<td>C D C C D C C C</td>
<td>12 15 1 3 21 6 1 6</td>
</tr>
</tbody>
</table>

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*
VT 127 Traffic Simulations
2035 AM/PM
4 lanes / 3 lanes
Short-Term Cross-Sections - 2 Concepts

**Study Team - Concept 1**

- **Existing:** 40’
- **Proposed:** 40’

**Advisory Committee - Concept 2**

- **Existing:** 40’
- **Proposed:** 40’

- **Existing:** 40’
- **Proposed:** 40’

- **Existing:** 35’
- **Proposed:** 35’

- **Existing:** 33’
- **Proposed:** 33’

**Plattsburg Ave to Shore Rd: Short-Term Pilot Concept**

- **Existing:** 40’
- **Proposed:** 40’

**Shore Rd to VT 127 Ramps: Short-Term Pilot Concept**

- **Existing:** 40’
- **Proposed:** 40’

**VT 127 Ramps to Institute Rd: Short-Term Pilot Concept**

- **Existing:** 40’
- **Proposed:** 40’

**Institute Rd to Washington St: Short-Term Pilot Concept**

- **Existing:** 35’
- **Proposed:** 35’

**Washington St to North St: Short-Term Pilot Concept**

- **Existing:** 33’
- **Proposed:** 33’

**ROW:**

- **Existing:** 66’ (Used), 66’ (Available)
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
Study Team’s Recommendation: 4- to 3-lane pilot project in medium-term

Shore Rd to VT 127 Ramps: Concept A (Three Lanes)

Existing: 40’

Proposed: 40’

ROW: 66’

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

**Ethan Allen Shopping Center:** reconstruct curb and sidewalk at Farrington’s Mobile Home Park and Bamboo Hut

**Ethan Allen Parkway:** implement scoping study recommendation (signal or roundabout)

**VT 127:** scoping study for roundabout

**Institute Road:** roundabout, resolve bus driveway
### Long-Term Cross Sections Concept

<table>
<thead>
<tr>
<th>Section Description</th>
<th>Existing Width</th>
<th>Proposed Width</th>
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<tbody>
<tr>
<td>Plattsburg Ave to Shore Rd</td>
<td>40'</td>
<td>46'</td>
</tr>
<tr>
<td>Shore Rd to VT 127 Ramps</td>
<td>40'</td>
<td>48'</td>
</tr>
<tr>
<td>VT 127 Ramps to Institute Rd</td>
<td>40'</td>
<td>46'</td>
</tr>
<tr>
<td>Institute Rd to Washington St</td>
<td>35'</td>
<td>38’-42’</td>
</tr>
<tr>
<td>Washington St to North St</td>
<td>33’</td>
<td>44’</td>
</tr>
</tbody>
</table>

**Concept D: On-Street One-way Protected Bike Lanes**

- **ROW:**
  - Plattsburg Ave to Shore Rd: 66'
  - Shore Rd to VT 127 Ramps: 66'
  - VT 127 Ramps to Institute Rd: 66'
  - Institute Rd to Washington St: 66'
  - Washington St to North St: 63’(Used), 66’(Available)
## High-Level Cost Estimates

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

Short Term Implementation?

• At all intersections
  1. ADA-compliant curb ramps and crosswalks on all approaches;
  2. audible pedestrian countdown timers with a minimum 5-second (push-button) Leading Pedestrian Interval (LPI); and
  3. bicycle facilities maintained through intersections (where provided in advance of intersections)

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Approving the Implementation Plan

**Short Term Implementation?**

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reduce intersection footprint, relocate northbound bus shelter, realign southbound sidewalk, pedestrian-activated no right turn on red.
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?

• **Washington Street**: raised intersection

• **Potential crosswalks** for medium-or long-term:
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Long Term Implementation?
Approving the Implementation Plan

Long Term Implementation?

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<tr>
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<td>40'</td>
</tr>
<tr>
<td>Shore Rd to VT 127 Ramps</td>
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<td>VT 127 Ramps to Institute Rd</td>
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</tr>
<tr>
<td>Institute Rd to Washington St</td>
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</tr>
<tr>
<td>Washington St to North St</td>
<td>44'</td>
<td>33'</td>
</tr>
</tbody>
</table>

ROW: 66'
Resources

  - 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!