Acknowledgements

Thank you to the following people who served on the Lyndon Walk Bike Safety Action Plan Steering Committee:

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Introduction

The Town of Lyndon (2010-2014 est. population 5,966) is located in the eastern part of Vermont’s rural Northeast Kingdom, with its winding roads and village centers where people who live here and those “from away” are discovering everyday biking for transportation and for fun. The area is home to a burgeoning mountain biking industry centered around Kingdom Trails at Burke Mountain. Lyndonville is home to one of Vermont’s few remaining historic academies, the Lyndon Institute, which provides secondary education for Lyndon children as well as boarders. It is also home to Lyndon State College, with over xxxx students. Families, college students and seniors in Lyndon want to be able to walk and bike around town, to and from the biking trails and for everyday errands. The group Paths Around Lyndonville (PAL) was established to create and promote walking trails throughout town.

Lyndon residents came together to advocate around the 2014-15 VTrans On-Road Bike Plan process, a statewide effort sponsored by the VT Agency of Transportation to make state roads work better and be safer for all people who bike - families, commuters and recreational riders. Based on analysis of state roads in the area and the needs identified by Lyndon area residents the following roads have been ranked as medium priority on the VTrans Bicycle Corridor Map:

<table>
<thead>
<tr>
<th>State Route</th>
<th>Description</th>
<th>Use/Priority</th>
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<tbody>
<tr>
<td>Route 5</td>
<td>South of Lyndon to St. Johnsbury</td>
<td>Medium</td>
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<tr>
<td>Route 5</td>
<td>North of Lyndon to West</td>
<td>Burke</td>
</tr>
<tr>
<td>Route 122</td>
<td>In and north of Lyndon to Exit 24</td>
<td>Medium</td>
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<tr>
<td>Route 114</td>
<td>Northeast to East Burke</td>
<td>Medium</td>
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In addition, VTrans has adopted a statewide policy for state roadways of a maximum motor vehicle travel lane width of 11 feet, with 4 foot shoulders in rural areas, or 5 foot bike lanes in downtowns and villages where possible. According to the Vermont State Design Standards, some rural collector roads in villages can have motor vehicle travel lanes as narrow as 10 feet. Recently, the town worked with VTrans to stripe buffered bike lanes on Route 5 and Center Street, which was possible because of a clear plan put together by knowledgeable staff, and supportive decision makers.
Lyndon residents and town officials wanted to build on the interest that began with the VTrans On-Road Bike Plan, and decided to work with Local Motion to develop a Walk-Bike Safety Action Plan with the goal of identifying short and long term options for road improvements that will increase walking and biking in Lyndon, and to make the roads safer. A steering committee was formed including representatives of Lyndonville, Lyndon Town, and the region. The intent of this plan is to build on the progress Lyndon has made to date.

**Benefits of Walking and Biking for Vermont Communities**

Biking and walking have significant benefits to offer Vermont communities. Walking and biking create safer communities because wider shoulders, sidewalks and bike lanes help to slow vehicle speeds on our winding country roads. The more varied forms of transportation sharing the road, the safer it is for everyone. As bike use grows, typically the number of all types of crashes declines. Creating a more human scale and pleasant place to stroll and shop in Vermont village centers and downtowns leads to a stronger local economy where people can meet their daily needs instead of driving to another town to do so. Transportation is Vermont’s largest source of energy consumption so one way to reduce our carbon footprint is to walk and bike more for short trips, which make up a large number of our overall travel. Finally, walking and biking improve community health by fighting climbing obesity rates and providing lifelong opportunities for physical fitness and mobility. Getting outside also supports mental health and can help counteract Seasonal Affective Disorder. Walking and biking have something to offer everyone in Vermont’s communities, rural and urban no matter how big or small.

**Issues and Opportunities**

Local Motion attended three Steering Committee meetings in order the learn about the group’s priorities, issues in the Town related to walking and biking, current walking and biking conditions and habits in Lyndon, as well as to better understand the opportunities for making improvements. Following an assessment of these issues and opportunities (see Appendix A), the group decided to focus on the
following three key action projects that are low cost, feasible to implement in the short term with little alteration to existing pavement width, and no need for right‐of‐way acquisition, as well as non‐infrastructure strategies (See Appendix B for more information):

<table>
<thead>
<tr>
<th>Steering Committee Priorities</th>
<th>Description</th>
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<tbody>
<tr>
<td>A. Identify how streets and roads throughout town can be restriped with narrower travel lanes and wider shoulders</td>
<td>Using Google Earth imagery, Local Motion examined roadway widths along roads around Lyndon identified by the Steering Committee where speeding is an issue and where more space for walking and biking is desired. Figure 2 shows the various locations in Lyndon with potential for restriping vehicle travel lanes to narrower widths, including Stevens Loop, Center St, East Burke Rd, and Back Center Rd. See Page 5.</td>
</tr>
<tr>
<td>B. Analyze options for a continuous walk‐bike connection from Lyndon State College to downtown Lyndonville</td>
<td>See Figures 3 and 4. Local Motion and Alta Planning + Design developed possible short- and long-term alternatives for a walk and bike friendly connection for the highly trafficked route between the college and downtown. See Pages 7 and 8.</td>
</tr>
<tr>
<td>C. Strategies for intersection upgrades to improve safety at two locations</td>
<td>See Figures 5 and 6. Lyndon experiences a fair amount of foot traffic close to the settlements of Lyndon Center and Lyndonville, and around Lyndon College. The Steering Committee identified two locations which are safety concerns which could be improved by calming traffic, providing dedicated space for walking and biking and will result in safer, more predictable behavior. These are Lower Campus Drive and College Rd, College Rd and Center St. See Pages 9 and 10.</td>
</tr>
<tr>
<td>D. Non‐Infrastructure Strategies</td>
<td>Improve safety using policy, education and outreach. See Pages 11-12.</td>
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Infrastructure Recommendations

Steering Committee Priority A - Identify how streets and roads can be restriped with narrower travel lanes and wider shoulders: Narrowing the width of vehicle travel lanes to 10 or 11 feet by striping fog lines, shoulders or bike lanes creates a traffic calming effect. A maximum 11 foot lane/minimum 4 foot shoulder width is now VTrans policy for all road resurfacing projects. The less available space that drivers perceive causes them to drive more slowly. Slower speeds result in fewer and less severe crashes for all users and generally contributes to safer roads. In addition to the traffic calming effect, minimum 4 foot shoulders provide dedicated space for bicyclists and people walking.
Figure 2. Opportunities for restriping Lyndon area roads with narrower vehicle travel lane widths and wider shoulders.

- **Stevens Loop**: Approx 35-ft pavement width from Center St to Main Street. Travel lanes are 12-ft with 5-ft to 6-ft shoulders. **Recommendation**: Narrow striped lanes to 11-ft and stripe 5-6-ft bike lanes with stencils.

- **East Burke Rd**: Currently has 11-12 ft lane widths and 2-4 ft shoulders. **Recommendation**: Restripe road widths to 11-ft lanes where possible and widen shoulders as possible. Signage to indicate that bikes are on the road.

- **Center St**: Recently repaved to include bike lanes. **Recommendation**: Consider SLMs on the portion north of the bridge. There's already a sidewalk across the bridge.

- **Back Center Rd**: Narrow pavement 24-26 feet with 10-ft lanes and intermittent fog lines. **Recommendation**: Consider SLMs (ADT is ~2000 35 MPH) there's no room for anything else. Also consider advisory bike lanes.
Steering Committee Priority B: Analyze options for a continuous walk-bike connection from Lyndon State College to downtown Lyndonville

Table 2. Short and Long-Term Options for a Continuous walk-bike connection

<table>
<thead>
<tr>
<th>Improvement Type</th>
<th>Description</th>
<th>Implementation</th>
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<tr>
<td><strong>Recommended short-term improvements</strong></td>
<td><strong>Figure 3</strong> details the recommended short-term alternative for creating a safer connection for vulnerable users along the important transportation route between Lyndon State College and downtown Lyndonville, which can be achieved by doing little more than altering current pavement markings. Local Motion and alta planning + design analyzed options for short term infrastructure improvements, considering existing infrastructure, vehicle travel lane and shoulder widths, right of way, traffic volumes, speeds and best practices for bicycle and pedestrian infrastructure design. We recommend that the following changes be made as soon as possible.</td>
<td>Immediate implementation</td>
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| **Recommended long-term Improvements** | **Figure 4** illustrates the recommended long-term alternative for creating a safer walk-bike connection between Lyndon State College and Lyndonville, passing by the Lyndon Institute. Many of these improvements are within the existing right-of-way but involve additional pavement to expand shoulders and create space for multi-use paths.  

The route takes the form of a shared-use path along College Road between the college and the Institute. This will enable a comfortable path that is accessible to people of all ages and bicycling abilities. It transitions to bike lanes on Center Street, before connecting to the existing bike lanes on Center Street. The area underneath the two overpasses allows enough width to fit a shared-use path without tampering with the existing structures. The lakes east of the overpasses present an opportunity to install a bike/ped bridge. For an example of an existing boardwalk bridge, check out [Akron, OH's Towpath Trail](http://www.localhost.org) | Implement in pieces, over the next 10 years                                                                                                                                                                                                 |
Figure 3. Recommended Short-Term Improvements Between Lyndon State College and Lyndonville

1. Lower Campus Drive could feature a bike lane on the western (uphill) side of the street and shared lane markings on the eastern side (downhill). The current speed limit (45 MPH) should be lowered to not more than 30 MPH, preferably less. Additional speed studies and field observation are warranted to determine feasibility. Shoulder bike lanes or a shared-use path could be installed in the future.

2. At 30 feet wide, College Road could accommodate 11 foot travel lanes and 4 foot striped and signed bikeable shoulders. This option means narrowing the existing travel lanes to 11 feet. Long-term options should provide additional space to separate people bicycling from people driving, perhaps by widening the road to fit bike lanes or by adding a shared-use path.

3. Current shoulders near Institute Pond are 3.4 feet. The pavement is approximately 30 feet wide. The roadway could be restripped to make additional shoulder space for bicycles. However, longer term repaving is needed to increase space for bicyclists and because of the presence of alligator cracking on this section of asphalt.

4. Reallocation parallel parking space on the south side of Center Street and reorienting angle-in parking as back-in parking would make space for either: a two-directional protected bike lane or standard bicycle lanes. If choosing the bi-directional cycletrack, the lanes could transition to standard bike lanes near the long, angled crosswalk by Lyndon Center Baptist Church.

5. The northwest corner of Center Street and College Road could be reconfigured as a public plaza or as a resting place for people bicycling to nearby destinations. The area near the welcome sign could be paved and/or feature benches and other amenities such as maps. The diagonal crosswalk would be reorientated to cross the roadway at 90 degrees.

6. Bicyclists can be routed along Matty House Circle and over the existing bike-ped bridge. The Electric Department parking lot would require pavement markings to alert motorists to people riding bicycles. Park Avenue can feature advisory bike lanes that connect to Main Street and to Center Street.

Lyndonville Potential Bike Friendly Connection:
Short-term Implementation

- [ ] Lyndon State College
- [ ] Lyndon Institute

Uphill bike lane/downhill shared-lane markings
Preliminary steps towards bicycle-friendly shoulders
Proposed quiet street connection to off-street path through parking area to Park Avenue

Sources: Local Motion, Local Motion, US DOT, USDA, USDA, USDA, USDA, USDA

Data Source: Vermont Center for Geographic Information
Aerial Photos: Google Maps, Near Maps
Figure 4. Recommended Long-Term Improvements Between Lyndon State College and Lyndonville

1. Inclines and lack of clear sight lines suggest possible benefits from a separated path. The path will enable people to reach the college on foot and by bike. Since the path would be physically separated from the roadway, it will welcome people of all ages and abilities. Including faculty members or students who do not frequently use bicycle for transportation.

2. The trail should cross Lower Campus Drive at the intersection. Adding a Rapid Rectangular Flash Beacon at the intersection would improve the crossing. The existing guardrail would need to be reconstructed along with the trail and trail crossing in the southwest corner of the intersection.

3. Limited right-of-way due to an overpass represents a constraint. However, adding curb to the north side of College Road could make room for a 10’ to 12’ sidewalk without impacting the existing overpass.

4. Constrained right-of-way due to lack of shoulder, guardrails, and water on either side of roadway. The challenge warrants additional study. A bicycle and pedestrian-only bridge, wide enough for winter snow maintenance, could facilitate a comfortable crossing. The Lyndon Institute currently features two pedestrian crosswalks. Pedestrian crossings should be integrated within the proposed shared-use path’s design.

5. The shared-use path continues past the Lyndon Institute, along the north side of College Rd. Perpendicular parking could be changed to angled parking to allow for the path’s continuation between the parking and the trail.

6. Improve pavement markings on Center St. to facilitate the path to bike lane connection on Center St., as well as to enhance the transition from south to east on Center St. Pavement markings should be provided to facilitate the bikeway connection between Center and Broad Streets.

Lyndonville Potential Bike Friendly Connection

- Lyndon State College
- Lyndon Institute
- Lyndon Village

Proposed shared-use path
Proposed bike lanes
Existing bike lanes

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Data Source: Vermont Center for Geographic Information
Aerial Photos: Google Maps, Near Maps
Created by: Alta Planning + Design
Created for: Local Motion

www.localmotion.org
Steering Committee Priority C: Intersection upgrades to improve safety at two locations

Lower Campus Drive and College Rd: Improvements to this intersection include signage and pavement markings to make drivers aware of vulnerable users in the road and provide bicyclists and pedestrians with dedicated space where needed, such as climbing up Lower Campus Drive and heading east on College Rd.

Figure 5. Intersection Improvements for Lower Campus Drive and College Rd
**Intersection of College Rd and Center St:** This is a popular pedestrian intersection in the heart of Lyndonville, used by many people walking across College Rd and Center St to access the Lyndon Institute playing fields and track. It was the location of a crash in 2016 where two Lyndon Institute students were injured, one of them severely. This concept improves safety for people walking and biking, by making them more visible, providing dedicated space and a more predictable crossing pattern. These improvements will also ensure that drivers will proceed through slowly. See Appendix C for more information about back-in angled parking. Longer term, the intersection could be raised and using colored asphalt it can be into a plaza where pedestrians have the right of way at all times.

![Diagram of Intersection Improvements for College Rd and Center St](image-url)
Non Infrastructure Recommendations

In addition to the location-specific infrastructure improvements noted in this *Walk-Bike Safety Action Plan*, Local Motion identified several potentially viable non-infrastructure strategies for improving walk-bike safety in Lyndon.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
<th>Partners and Examples</th>
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<tbody>
<tr>
<td>A. Update local ordinances</td>
<td>Update local ordinances regarding the rights and responsibilities of non-motorized users of local roads. The town of Middlebury recently undertook a comprehensive rewrite of those portions of its ordinances that pertain to vulnerable users, with an eye towards clarifying where and how people can walk and bike on streets, sidewalks, and paths in town.</td>
<td>Middlebury’s rewrite was led by local volunteers in close collaboration with the police chief. The language was recently approved by the selectboard. It might serve as a useful starting point for Lyndon to do the same.</td>
</tr>
<tr>
<td>B. Organize a sidewalk stenciling campaign</td>
<td>Organize a downtown sidewalk stenciling campaign to promote safe walking and biking.</td>
<td>Local Motion offers materials and assistance with local volunteer-led stenciling of safety messages and graphics on sidewalks using temporary spray chalk.</td>
</tr>
<tr>
<td>C. Apply for <em>Walk-Friendly Community/Bicycle-Friendly Community</em> recognition.</td>
<td>These free programs help a community evaluate how effectively it supports and promotes walking and biking. Qualifying communities are awarded recognition starting at bronze and going up to diamond levels, and all communities that apply are given detailed feedback on steps to take to achieve the next level of recognition.</td>
<td>Local Motion can assist with the application process. The Town must be the applicant.</td>
</tr>
<tr>
<td>D. Presentation on the benefits of walking and biking</td>
<td>Offer one or several workshops or presentations for local elected officials and/or staff regarding the benefits of walking and biking.</td>
<td>Local Motion can develop customized presentations on topics that are particularly...</td>
</tr>
<tr>
<td>E. Walking and/or biking tour</td>
<td>Organize a walking and/or biking tour of key sites of concern with local officials and community leaders.</td>
<td>Local Motion could lead the tour, highlighting issues and solutions as outlined in this proposal.</td>
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<tr>
<td>------------------------------</td>
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<td>-------------------------------------------------------------------------------------------------</td>
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<tr>
<td>F. Bike Smart program</td>
<td>Institute regular bike skills training for kids in grades 3 through 6.</td>
<td>Local Motion can provide a cargo trailer filled with kids’ bikes and all needed equipment for building bike skills training into PE and/or afterschool at a nominal cost, and can train school staff in how to implement our bike skills curriculum. Partner with school and teachers.</td>
</tr>
<tr>
<td>G. Add walk-bike policy language to the town plan</td>
<td>Amend town plan to include policy about narrowing lane widths and creating a connected walk-bike network in Lyndon.</td>
<td>Work with NVDA</td>
</tr>
</tbody>
</table>

In addition to the strategies outlined briefly above, these and others are presented in much greater detail in the “Toolkits” section of the Safe Streets Vermont website, which is available online at [http://safestreets.vermont.gov/toolkits](http://safestreets.vermont.gov/toolkits).
Next Steps

There is great potential to capitalize on the energy in Lyndon, the Steering Committee work to date and the opportunities ahead. We recommend the following next steps.

1. **Apply for a Vermont Bike-Ped Program Grant in July 2016:** Select specific projects from the recommendations in this plan to implement.

2. **Continue to meet as a Steering Committee:** Meet quarterly or monthly as a steering committee. We recommend that the steering committee organize into a local advocacy group that can spearhead future walk-bike projects. Elect leadership and ask for town and regional staff to attend meetings.

3. **Amend the Town Plan to include Walk-Bike goals and policies.** Strong policy language lays the groundwork for long term town leader support of safety improvements and will make the town more competitive when applying for grants and other funding for projects. The town could adopt this plan into the Town Plan by reference.

4. **Identify pilot projects.** The steering committee should identify pilot projects that they advocate for demonstrating around town. Any of the shorter term projects in this plan could start as pilot projects. Recruit volunteers, borrow Local Motion’s pilot trailer and make them happen! One example is *reverse in angled parking* on Center Street. See appendix B for more information about how this can work.

5. **Celebrate!** Plan a fall Walk-Bike event to highlight the positive changes in the community so far and what you’ve accomplished together.