planBTV Walk Bike

Walk Bike Master Plan

The Other E's, with others' support
- Increase staff capacity in 2017 and 2018
- "Crash not Accident" pledge
- Professional drivers' training program
- Create a Data Dashboard of mobiles
- "Crash not Accident" pledge
- Bike skills and lock/safety gear initiatives
- Expand safety outreach to drivers
- Expand Safe Routes to Schools
- Host a summit and events for women and seniors
- Review crash reporting protocols
- Increase Safe Streets Collaborative's reach
- Launch enforcement stings
- Expand efforts across minority communities
- Consider location equity in programming
- Integrate equity safeguards in enforcement
- Deepen understanding of needs and priorities of under-represented Burlingtonians

How Much?

Next Steps

HOW?
- The 6 E's
  - Education
  - Enforcement
  - Engineering
  - Evaluation
  - Equity
  - Engagement

Vision

Imagine a future where everyone is involved and included in the planning and implementation of walk and bike initiatives in Burlington.
**planBTV Walk Bike**

**Walk Bike Master Plan**

**The Other E's, with others' support**

- Increase staff capacity in 2017 and 2018
- Create a Data Dashboard of metrics
- "Crash not Accident" pledge
- Bike skills and lock/safety gear initiatives
- Professional drivers' training program
- Expand Safe Routes to Schools
- Expand safety outreach to drivers
- Expand events (plaza, breakfast, more)
- Host a summit and events for women and seniors
- Revises crash reporting protocols
- Increase Safe Streets Collaborative's reach
- Launch enforcement initiatives
- Expand efforts across minority communities
- Consider location equity in programming
- Integrate equity safeguards in enforcement
- Deepen understanding of needs and benefits

**How?**

**The 6 E's**
- Encourage
- Educate
- Empower
- Enforce
- Evaluate
- Engage

**Focus Groups**

**Workshops**

**Online Surveys**

**Demonstrations**

**Social Media**

**Demo Projects**

**How Much?**

**Next Steps**

- Develop strategic plans, approaches, and objectives
- Implement strategic plans
- Monitor and evaluate progress
- Secure additional funding and support
- Evaluate and refine strategies
- Use data to inform decision-making

**Why?**

- Improve safety, health, and mobility
- Reduce roadway congestion
- Enhance community connections
- Promote climate resilience
- Foster economic development
- Improve air quality
- Increase accessibility for all communities
planBTV Walk Bike
Walk Bike Master Plan
PART 1: WHY?

CHAPTER 1 - BACKGROUND AND CONTEXT
Why do we want to advance the plan goals?

CHAPTER 2 - PUBLIC INPUT, PUBLIC ACTION
How Public Input Helped Shape the Plan.
Summary of Outreach Activities.
Action! Demonstration Projects for Public Involvement.

PART 2: HOW?

CHAPTER 3 - ENGINEERING
Introduction to Designing Safer Streets.
Safe Streets Design Principles.
Action Plan Overview.
Citywide Walk/Bike Plan Priorities and Approach.
Sub-Area Overview Map.
Sub-Area 1: The New North End.
   Existing Conditions.
   Project Recommendations (12-months, 5 years, and long term).
Sub-Area 2: Downtown | Old North End | Campus Area.
   Existing Conditions.
   Project Recommendations (12-months, 5 years, and long term).
Sub-Area 3: South End.
   Existing Conditions.
   Project Recommendations (12-months, 5 years, and long term).

CHAPTER 4 - BEYOND INFRASTRUCTURE
Introduction to the “Other E’s”
Education Action Plan.
Encouragement Action Plan.
Enforcement Action Plan.
Equity Action Plan.

CHAPTER 5 - FUNDING AND IMPLEMENTATION
Funding and Implementation.
IMAGINE A FUTURE WHERE...

→ Burlington’s Streets were safe enough that parents could let their kids walk or bike to school, to the park, or to a friend’s house without worry; and that older adults could comfortably walk or bike from their house to community destinations such as the grocery store, or the pharmacy.

→ Walking, biking, and taking the bus were the preferred choice for students and adults living or working in Burlington, all year round.

→ Burlington’s transportation network improved our local economy and quality of life, leading people to stay in Burlington and invest in our community.
This plan is about 2 things:

→ Creating safer streets for everyone

→ And, making walking and biking a viable (and enjoyable) way to get around town.
We will eliminate traffic-related fatalities and serious injuries by 2026.

By 2026, reliance on drive-alone trips will be low, and alternative modes will make up the majority of commute trips in Burlington.
Why?

Burlington residents would walk or bike more often if conditions were better.

- Comfortable bicycle lanes
- Well-maintained sidewalks
- Bicycle parking
- Wayside bicycle parking

51% more people would walk or bike if these conditions were better.

2006 Mode Share Goal:

- Walk: 15%
- Bus: 5%
- Car: 70%
- Train: 2%
- Bicycle: 8%

Current Mode Share:

- Walk: 12%
- Bus: 4%
- Car: 73%
- Train: 3%
- Bicycle: 10%
51% of Burlington residents over the age of 45 feel that the City’s streets are unsafe for cyclists.*

Burlington residents would walk or bike more often if conditions were better.

Percentage of Burlingtonians aged 45 and over who would walk or bike more often if conditions were better:*

- Extremely / very likely: 43%
- Somewhat likely: 23%
- Not very likely/ not at all likely: 10%
- Not sure / no answer: 24%

*Based on a 2015 AARP VT “Livable Burlington” Survey.
Burlington's infrastructure isn't keeping up with demand

0 miles of protected bike lanes

12% of streets have bike lanes (11.9 miles total)

3% of streets have shared lane markings (2.9 miles total)

"Gold Level" Bike-Friendly cities are doing much better
HOW?

The 6 E's
- Engineering
- Evaluation/Planning
- Education
- Encouragement
- Enforcement
- Equity

Design safer streets
Measure success
Help people
Celebrate
Public safety
Geography and demographics

Rapid Implementation
Wide, open streets = Danger
High speeds = Danger
Lower speeds × Lower

Prezi
An Action Plan

Street design = self-enforced speeds = fewer crashes, more mobility

Improve safety at top 20 intersections (2/yr)

100 public bike racks / yr + reduce bike theft + high capacity station in 3 yrs

Connect the sidewalk network = more mobility

Bike share outreach in 2017

Create a dense, connected bike network = more mobility

Placemaking

Reduce urban runoff by 80% on green streets

Alley Walk
crossing signal gives people walking a head start. Increases compliance of turning cars to yield to crossing

**ADVISORY BICYCLE LANE**

**Definition:** A bicycle lane that creates preferential space for bikes that cars can use as needed to make room for oncoming traffic. Advisory bicycle lanes are typically marked with a dashed (not solid) line, and they are often used in conjunction with centerline removal along low-speed, low-volume streets. Bollards can be placed on the dashed line at intervals to enforce motorist use of the center lane.

**BICYCLE BOX**

**Definition:** A section of pavement aimed at preventing bicycle/car collisions at intersections, particularly between drivers turning right and cyclists traveling through an intersection or turning left. To improve its visibility, a Bicycle Box is often colored and includes a standard white bicycle pavement marking.
**Definition:** A one or two-way bicycle lane that is separated from vehicular traffic with physical barriers (such as bollards, medians, raised curbs, etc.).

**Overlapping benefits:** By providing a low-stress option for riding a bicycle in the roadway itself, protected bicycle lanes typically reduce the frequency of sidewalk riding. They can also have a traffic calming effect, add beauty, introduce stormwater management, and improve access to commercial districts.

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**PROTECTED INTERSECTION**

**Definition:** The use of design treatments (corner refuge islands, forward stop bar for bicyclists, a setback for bike and pedestrian crossing, and bicycle/pedestrian friendly signal phasing) to simplify left turns, protect right turns from traffic, and provide through movement that minimize or eliminate conflicts from turning cars.
SCRAMBLE CROSSING

Definition: The use of a signal that goes red for people driving on all sides of an intersection, while allowing people walking or biking to cross in all directions, including diagonally, in an exclusive signal phase.

SHARED SPACE

Definition: A public right-of-way, typically curbless, where people using all modes of transportation share the space without traditional safety infrastructure to guide them. May also be called a “woonerf.”

Overlapping benefits: Can provide a low-stress bikeway and place-making benefits.

SHARED USE LANE MARKING (OR “SHARROW”)

Definition: Pavement marking that indicates a shared lane for bicycles and automobiles. Sharrows reinforce the legitimacy of bicycles on the street, recommend proper positioning, and may be used to offer directional guidance. Sharrows are not a substitute for bike lanes, and more robust treatments should be applied wherever conditions...
Neighborhood Greenways: A Field Guide

Neighborhood Greenways are streets with low vehicle volumes and speeds, designed to prioritize bicycling and enhance conditions for walking. Neighborhood Greenways are streets where people of all ages and abilities feel safe walking, biking, and playing. To create this condition, Neighborhood Greenways use a variety of the traffic calming and placemaking treatments, including:

- Narrow travel lanes, which can be created with curb extensions, channelizers, or chicanes.
- Treatments such as speed bumps and traffic diverters, which discourage vehicles from using the street as a cut-through.
- Greening elements such as planters or rain gardens.
- Clear wayfinding for people walking and biking.
- Pavement markings to reinforce the shared use of the street, typically via a shared roadway marking or sharrow.
- Protected crossings at major intersections.
Roundabouts: A Field Guide

Roundabouts offer many benefits, including increasing safety, road capacity, and design, and they are a tool that should be considered for Burlington’s intersections. Single lane roundabouts have an excellent safety record for all modes of transportation, and can accommodate car traffic in fewer lanes, potentially leaving more room on the streets for biking and walking. (Note that multi-lane roundabouts lose many of the safety benefits of single-lane roundabouts.) Roundabouts come in many sizes and styles, and each type has a place on Burlington’s streets. See the following page for details about potential opportunity sites for each of the roundabout types described below.

**MODERN URBAN ROUNDABOUT**

**Definition:** Typically greater than 90 feet in diameter (measuring the outside edge of the traffic portion), these roundabouts especially good for slowing down traffic, thus increasing safety for everyone.

**Cost Range:** Typically $3 to $5 million, due to high design and engineering complexity, and need for acquiring property, relocating utilities, etc.

![Main and High St. roundabout in Plymouth, NH between downtown and Plymouth State campus.](image)

**MINI ROUNDABOUT**

**Definition:** Have many of the same features of a full sized roundabout, but in a pint-sized version. Mini Roundabouts are completely “mountable” by larger trucks.

**Cost Range:** Much lower than Modern Urban Roundabouts. Depending on design, can range from $100,000 to $300,000. Vermont’s first Mini Roundabout is located in Manchester, VT.

![Mini roundabout from Fort Collins, CO.](image)

**NEIGHBORHOOD TRAFFIC CIRCLE**

**Definition:** Roundabout used for traffic calming and beautification on low volume neighborhood streets. Many examples exist in Burlington through the city’s Traffic Calming program. Large vehicles have to make their left turns “left of center” of the island.

**Cost Range:** Less than $50,000, depending on materials and landscaping.

![Flickr Dylan Passmore](image)
Slow Zone Priorities

- Corridor Slow Zone: design for \( \leq 25 \text{mph} \)
- Neighborhood Slow Zone: design for \( \leq 20 \text{mph} \)
- Downtown Slow Zone: design for \( \leq 20 \text{mph} \)
Prezi

The figure above illustrates the need for
approach with high priority. The
increase in traffic flow is a serious
problem, especially during peak
hours. The 20mph speed limit for
slow traffic is essential.
Walk Plan Priorities

- Top 20 Priority Intersections
- Priority Corridor for safety and placemaking
- Priority Corridor for safety
- Priority Corridor for placemaking
- Park/Open Space
- University/Campus Area
- City Boundary
Building the Long-term (15 yr) Bicycle Network

The following page outlines the long-term vision for a fully connected bicycle network that appeals to people of all ages and abilities.

Of course, this network will not be built overnight. The diagrams on this page show how infrastructure can be improved incrementally, building on Burlington’s existing base of bikeways and paths over the next 15 years to achieve the network illustrated in the long-term map. Starting on page 74, the plan will zoom in on 3 sub-areas of the City and describe recommended projects for each area.
Long-term vision for a bicycle network appeals to people.
Level of Stress Analysis: Existing Bicycle Facilities

This map represents existing low-stress bicycle connections. While some low-stress facilities do exist, they do not connect in any reliable way. For walking and biking to be viable modes of transportation, Burlington must create continuous pedestrian and bicycle networks that work for people of all ages and abilities.

Legend
- Low-Stress Network - Shared Use Paths
- Conventional Network
- City Boundary
- Park/Open Space
- University/Campus Area

Level of Stress Analysis: Long-Term Bicycle Network

This map represents the intent of the 15-year bike network. Introducing a rich network of low-stress routes would appeal to people of all ages and abilities. Achieving this outcome will require a substantial investment in street infrastructure, but also policies and programs that support cycling.

Legend
- Low-Stress Network - Shared Use Paths
- Low-Stress Network - Protected Bike Lane
- Low-Stress Network - Neighborhood Greenways
- Conventional Network
- City Boundary
- Park/Open Space
- University/Campus Area
START NOW!
12-month priority action list

- Neighborhood Greenways
- Protected bike lanes
- Curb extensions
- Bike lanes through intersections
- Bike parking
- Bikeway-connectors - paint & signs
- Conflict markings
Hunt MS path markings
Ledd Park bikeway
Lakeview Tr. Greenway
Colchester / East Ave
Protected lanes: Union, Winooski
Pearl St: bike lane, curb extensions

College/Prospect bike crossing

Winooski Corridor pilot

Depot St

Main / Champlain curb extensions
Austin Dr protected lanes
Birchcliff Pkwy Greenway
Ledge Rd bikeway
Pine St curb extensions
Pine St signs + bike lanes
Queen City Park Rd
Engineering Policies

Adopt a Vision Zero policy by 2018

Support zoning that enhances Neighborhood Activity Centers

Create a Placemaking Program

Expand Pilots and Demonstrations

Pass and enforce walk/bike friendly ordinances

Improve bus/bike travel and markings
Winter Cycling Action Plan

Formalize the winter cycling maintenance plan for connectivity

Experiment with maintenance techniques on heavily used paths

Design/retrofit streets for snow storage

Develop plowing techniques and train staff

Develop flexible treatments for protected bikeways

Test pavement marking methods

D-ice bikeways before heavy snowfalls

Evaluate winter cycling rates

Expand winter cycling resources online
Winter Bicycle Network Priorities (15 yr)

Burlington’s winter climate should not be viewed as a barrier to cycling, but as an opportunity to embrace the season as any skier, snowshoer, or ice skater does when the temperature dips below freezing. The map on this page illustrates priority corridors for snow clearance in winter. Note that not all corridors shown here exist today - the map assigns a prioritization level for every new facility recommended in the Longterm Citywide Bicycle Network. Because it builds from the long-term vision, this map provides guidance about how winter maintenance teams should categorize new facilities as they are built.

Winter Bikeway Network Priority Maintenance

- **Priority Maintenance**
- **Conventional Maintenance**
- **City Boundary**
- **Park/Open Space**
- **University/Campus Area**

Note: The Burlington Bike Path is recommended for conventional maintenance, with the intent that it be maintained for cross country skiing and other winter sports, while people biking could use the protected bicycle lanes recommended for North Ave. in the long term.
The Other E's, with others' support

- Increase staff capacity in 2017 and 2018
- Create a Data Dashboard of metrics
- "Crash not Accident" pledge
- Bike skills and lock/safety gear initiatives
- Professional drivers' training program
- Expand Safe Routes to Schools
- Expand safety outreach to drivers
- Expand events: play streets, breakfasts, more!
- Host a summit and events for women and seniors
- Revise crash reporting protocols
- Increase Safe Streets Collaborative's reach
- Launch enforcement stings
- Expand efforts across minority communities
- Consider location equity in programming
- Integrate equity safeguards in enforcement
- Deepen understanding of needs and priorities of under-represented Burlingtonians
How Much?

A snapshot of what we spend in a typical year now:

- **$1.1 million**
  - Funding for sidewalk repair/replacement (replacement cycle is too long)

- +
  - Additional funding from grants & ongoing project budgets

= **$1.5 million**

Additional annual funding needs called for in the 10-Year Capital Plan through 2031:

- **$1 million**
  - Capital Sidewalk Funding

- +
  - Capital funding for other walk/bike projects

= **$1 million**

How we implement recommendations in the next 5 years (through 2026):

- **$2.1 million**
  - City funding to repair various sidewalk failures

- +
  - City funding and grant funding to implement other walk/bike projects recommended in the plan

= **$450,000+**

- $350,000 - estimated cost for projects in next 12 months
- $475,000+ - estimated cost for projects recommended in the last 5-year timeframe, over 4 years

Estimated annual needs for sustainable funding after 2026:

- **$1.5 million**
  - + 3% escalator to sustain a 40-year sidewalk replacement cycle

- +
  - $2 million
  - + 3% escalator for transportation system expansion, including walk/bike projects

Question:

Prezi
Much?

A snapshot of what we spend in a typical year now

$1.1 million
Funding for sidewalk repair/replacement (replacement cycle is too long!)

+$350,000
For other walk/bike projects from Bicycle Program, Traffic Calming Fund, and City Capital

+ Additional funding from grants & ongoing project budgets

=$1.5 million

Additional annual funding needs called for in the 10 Year Capital Plan through 2021

$1 million
Capital Sidewalk Funding

+$100,000
Capital funding for other
Additional annual funding needs called for in the 10 Year Capital Plan through 2021

$1 million
Capital Sidewalk Funding

$100,000
Capital funding for other walk/bike projects

How we implement recommendations in the next 5 years (through 2021)

$2.1 million
City funding to repair

$450,000+
City funding and grant funding to implement other
$1 million
Capital Sidewalk Funding

$100,000
Capital funding for other walk/bike projects

How we implement recommendations in the next 5 years (through 2021)

$2.1 million
City funding to repair serious sidewalk failures.

$450,000+
City funding and grant funding to implement other walk-bike projects recommended in the plan:

- $295,000 - estimated cost for projects in next 12-months
- $475,000/yr - estimated cost for projects recommended in the 2-5 year timeframe, over 4 years.

Estimated annual needs for sustainable funding after 2021

$1.5 million
+ 3% escalator to sustain a 40-year

$2 million
+ 3% escalator for transportation system
$2.1 million
City funding to repair serious sidewalk failures.

+$450,000+
City funding and grant funding to implement other walk-bike projects recommended in the plan:

$295,000 - estimated cost for projects in next 12-months
$475,000/yr - estimated cost for projects recommended in the 2-5 year timeframe, over 4 years.

Estimated annual needs for sustainable funding after 2021

$1.5 million
+ 3% escalator to sustain a 40-year sidewalk replacement cycle

+$2 million
+ 3% escalator for transportation system expansion, including walk-bike projects

? Municipal bonds
TIF
Federal funding
Bundle funding sources
Increase sidewalk funding
Allocate Capital Funding to Walk/Bike
Dedicate additional street capital
Next Steps

October Public Works Commission approval
October (tentative) Planning Commission review
November TEUC review/approval
December City Council review/approval

www.planbtvwalkbike.org