

# DCR's Crosswalk Improvements at Arnold Arboretum



## DCR Public Meeting

**May 6, 2014, 7:00 p.m. – 8:30 p.m.**  
**First Church, Unitarian Universalist**  
**6 Eliot Street, Jamaica Plain**



# Commonwealth of Massachusetts

Governor

**Deval L. Patrick**

Energy and Environmental Secretary

**Richard K. Sullivan, Jr.**

Department of Conservation and Recreation Commissioner

**John P. Murray**



## **DCR Mission Statement**

*“To protect, promote and enhance our common wealth of natural, cultural and recreational resources for the well-being of all.”*



*“Making the Arborway clean, green & safe for all users.”*

# Completed and Upcoming Projects

## Recently Completed Projects

- Jamaica Pond Access Improvements
- Installation of Arborway Median Fencing
- Arborway Hillside Vegetation Management Plan Phase 1 Implementation

## Upcoming Projects

- Perkins Street/Parkman Drive Traffic Study
  - Ongoing
- Arborway Paving
  - Scheduled for May 8
- Feasibility Study for Bike Lanes on the Arborway
  - Summer 2014

# Crosswalk Improvements at Arnold Arboretum Project Goals

- Improve safety of pedestrian and cyclists
- Calm traffic
- Improve access to and from the Arboretum

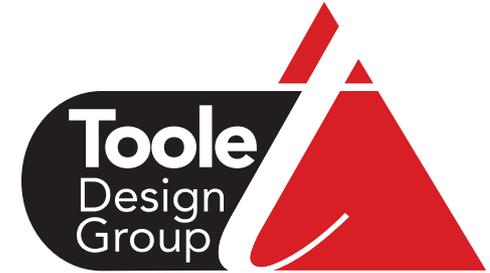


# Collaboration and Partnerships

Thank you to the 70+ partners who collaborated with DCR & the Arborway Coalition to make this project possible:

- Community Service Care
- Arnold Arboretum of Harvard University
- Arnold Arboretum Committee
- Arboretum Park Conservancy
- Emerald Necklace Conservancy
- Jamaica Hills Association
- Jamaica Pond Association
- Mt. Washington Bank
- Partners Health Care/Faulkner Hospital
- And many generous individuals!

# Toole Design Group's Mission Statement

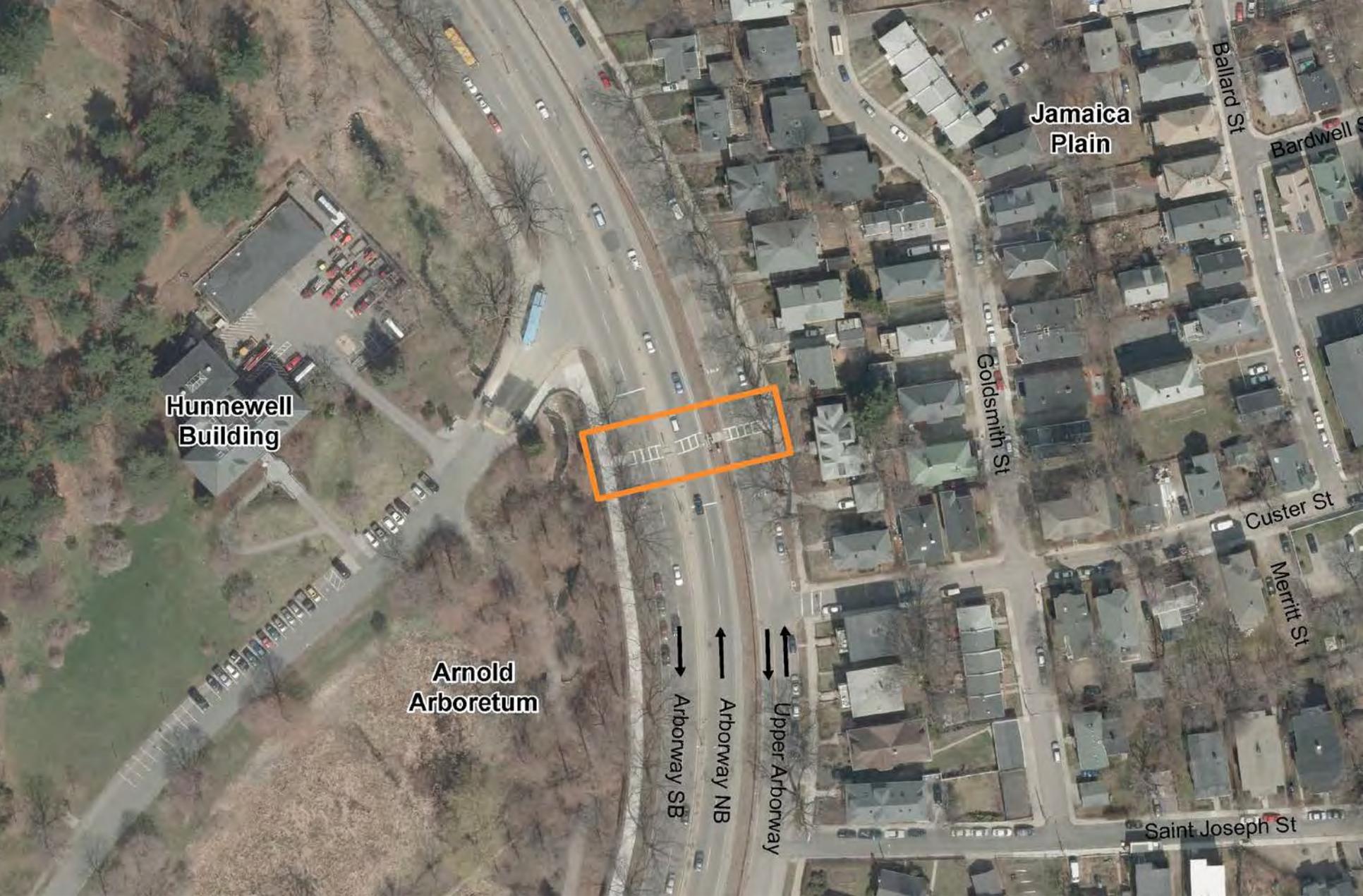


*“Making walking and biking possible  
for every trip”*



# Outline

- Study Area
- Improvements Methodology
- Existing Conditions Analysis & Findings
- Improvements & Recommendations
- Next Steps



Hunnewell Building

Jamaica Plain

Arnold Arboretum

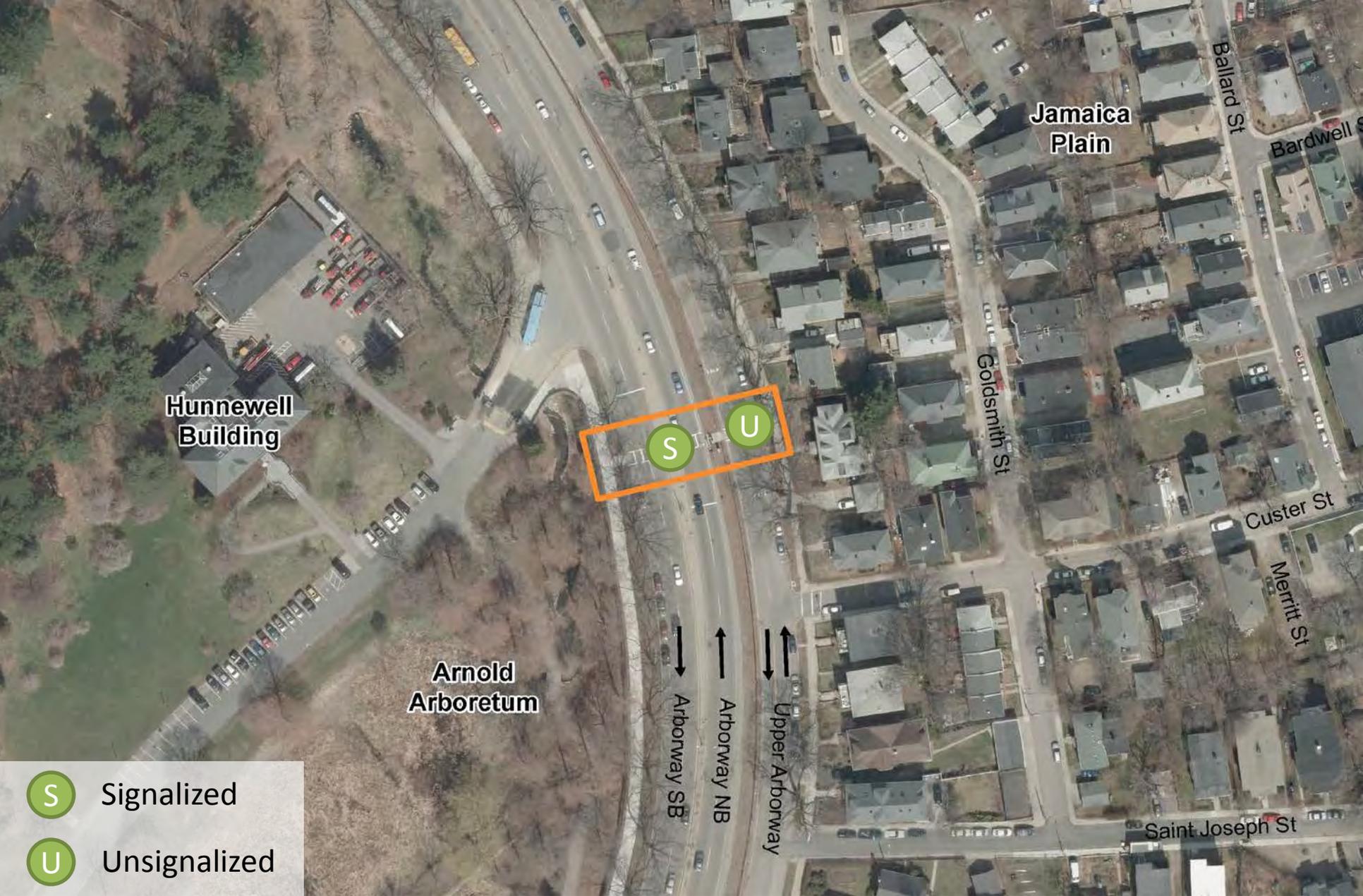
Arborway SB

Arborway NB

Upper Arborway

# Study Area





Hunnewell Building

Jamaica Plain

Arnold Arboretum

S

U

Arborway SB

Arborway NB

Upper Arborway

S

Signalized

U

Unsignalized



# Study Area

# Improvements Methodology

Stakeholder  
Input

Previous  
Planning  
Projects

Project  
Goals and  
Objectives

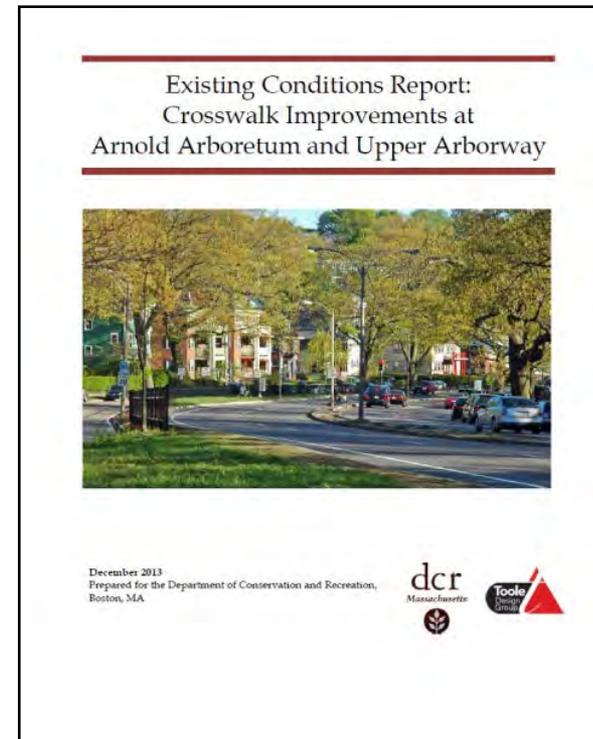


Existing  
Conditions  
Analysis

Guidelines  
and Best  
Practices

# Existing Conditions Analysis

- Stakeholder input
- Geometric conditions
  - ADA compliance
  - Sight distance
- Crossing elements
  - Traffic control device
  - Pavement markings
  - Signs
  - Lighting
- Traffic data
  - Motor vehicle speeds
  - Bicycle, pedestrian, and vehicle volumes
  - Vehicle classifications
- Crash data
- Behavioral observations
  - User conflicts
  - Desire lines



# Existing Conditions Findings



# Existing Conditions Findings



# Existing Conditions Findings



# Existing Conditions Findings



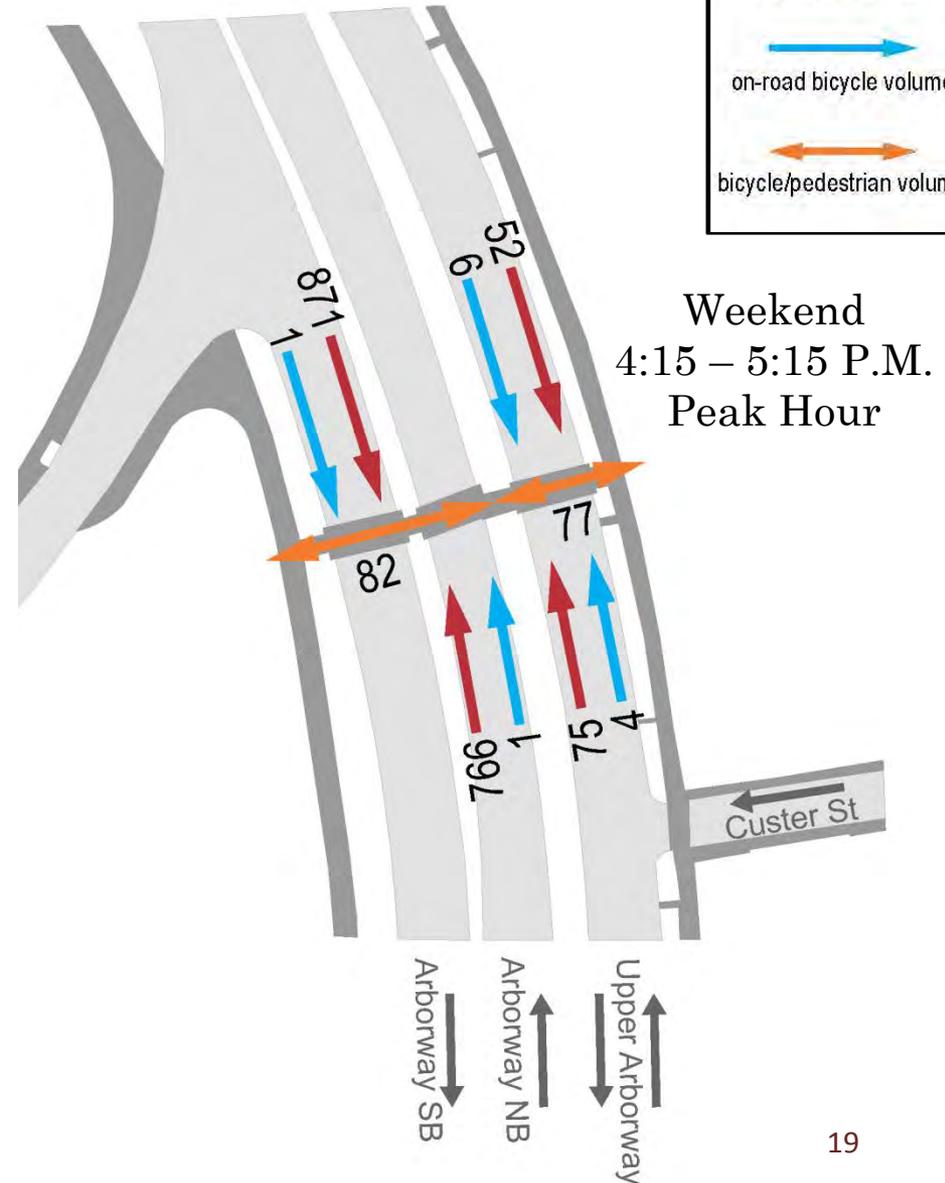
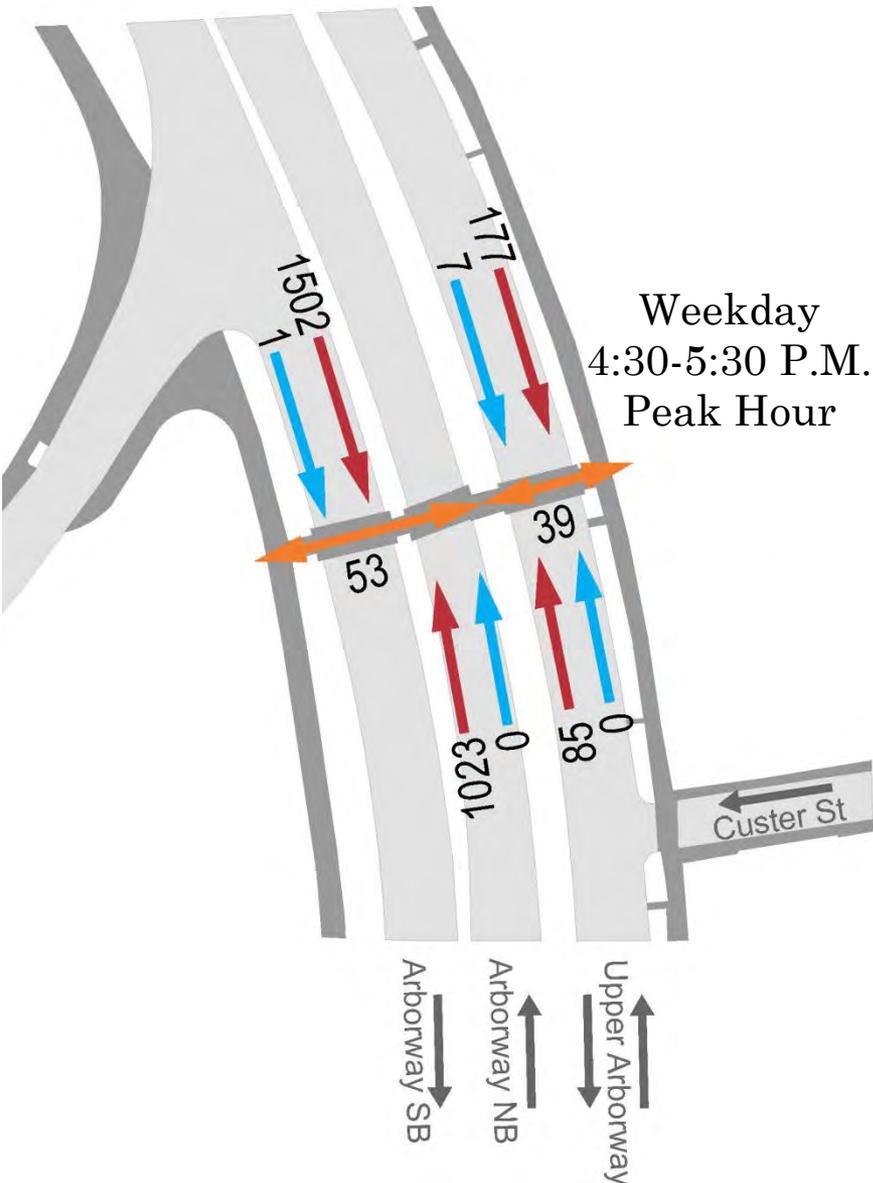
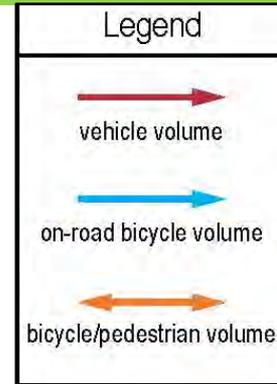
# Existing Conditions Findings



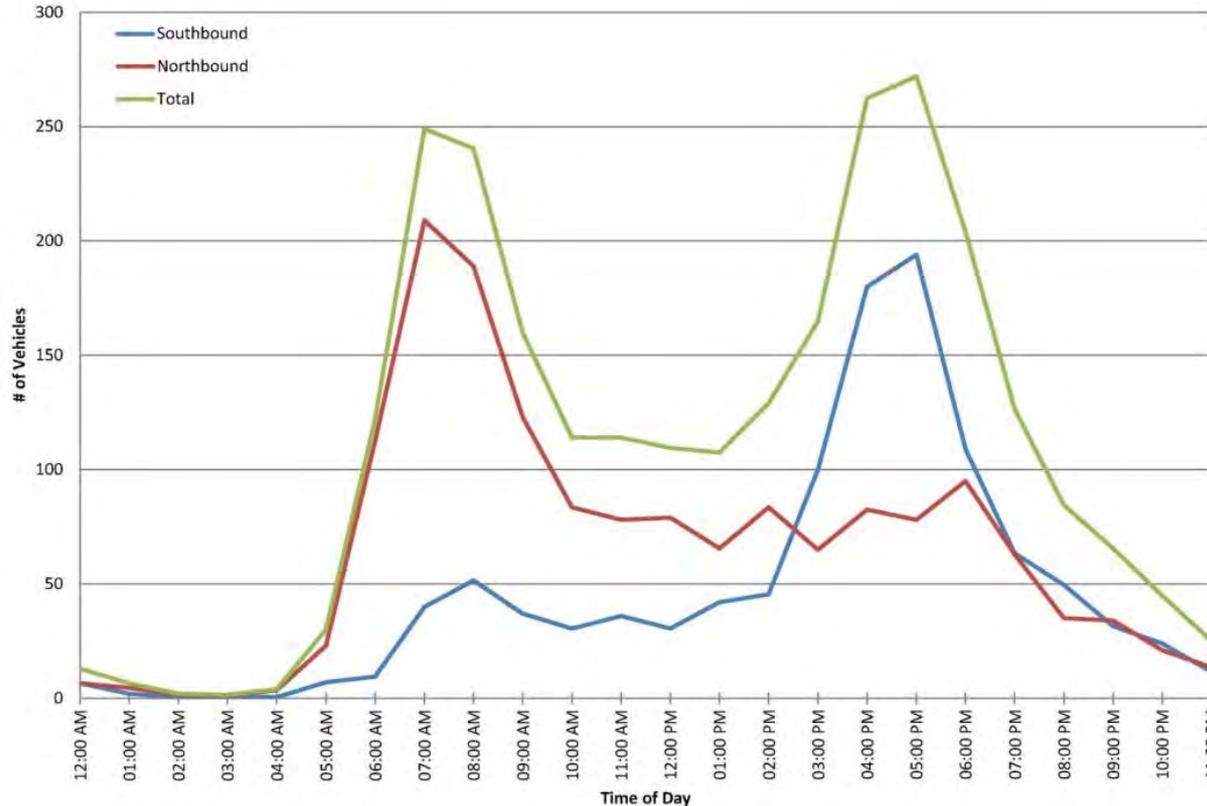
# Existing Conditions Findings



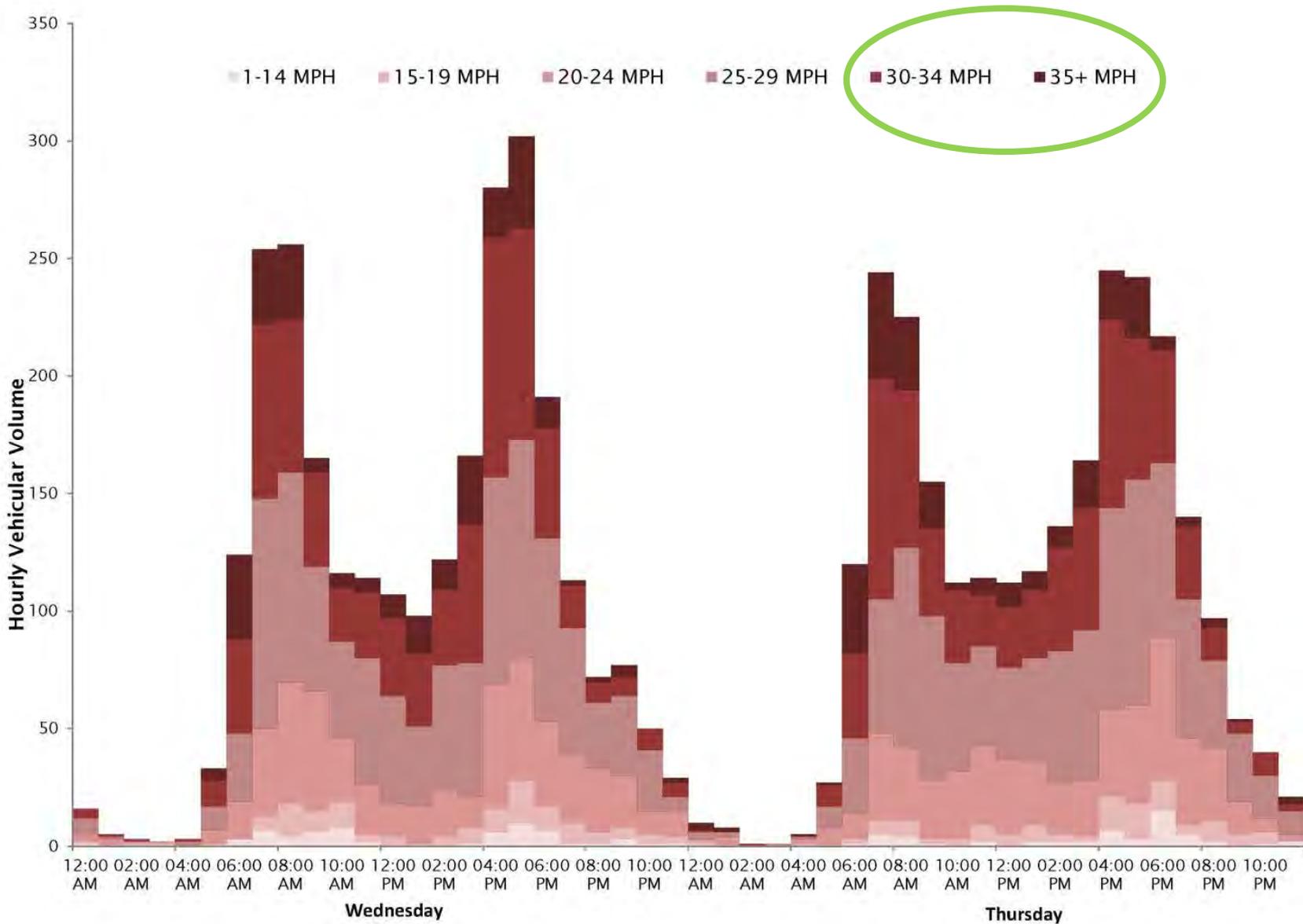
# Traffic Data



# Traffic Data: Upper Arborway



- Average Daily Traffic ~ 2,653 vehicles per day
- Approx. 1% of vehicles are trucks and/or buses

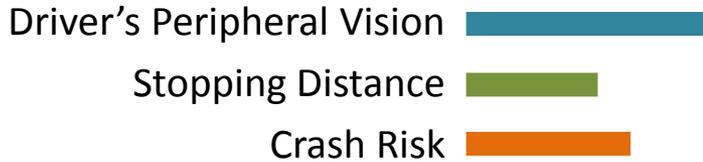


## Upper Arborway

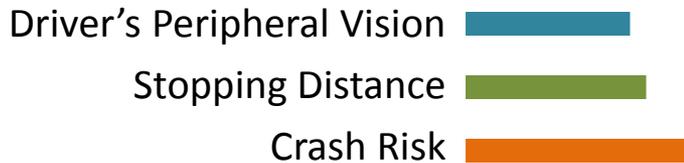
# Volumes with Speed Breakdown

# Effect of Speeding and Yielding

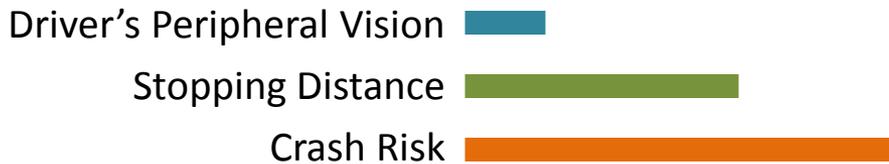
## 20 – 25 MPH



## 30 – 35 MPH



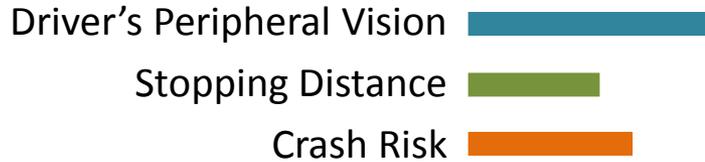
## 40 – 45 MPH



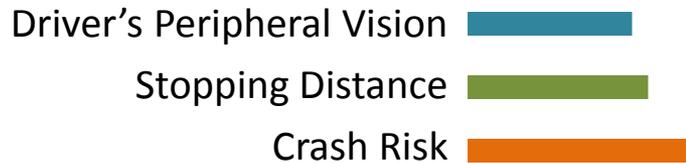
Source: NACTO Urban Street Design Guide

# Effect of Speeding and Yielding

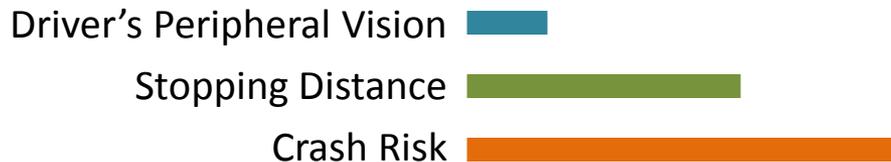
## 20 – 25 MPH



## 30 – 35 MPH



## 40 – 45 MPH



Source: NACTO Urban Street Design Guide

# Behavior Observations Findings

- Motorists do not yield to crosswalk users on Upper Arborway approximately half of the time
- Majority of non-motorized users looked for vehicles when crossing Upper Arborway
- Observed near misses of motorists and non-motorized users not yielding on Upper Arborway

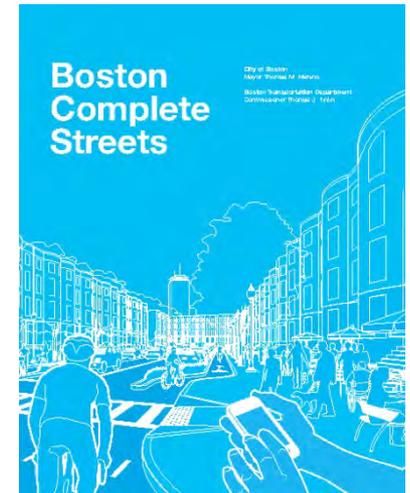
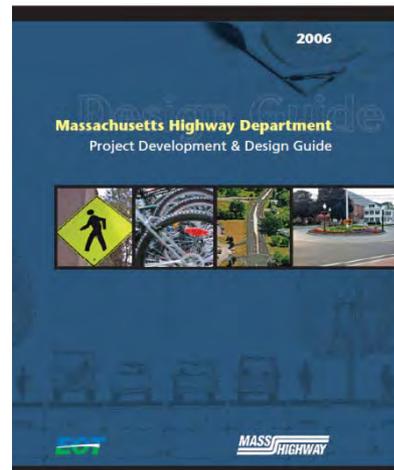
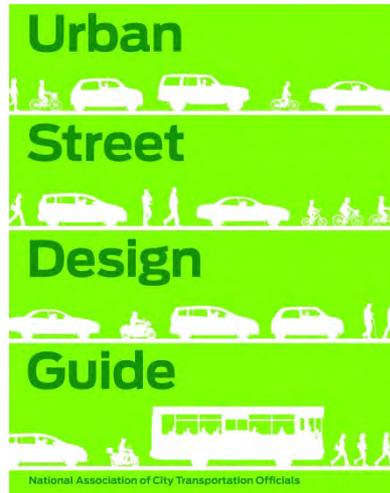
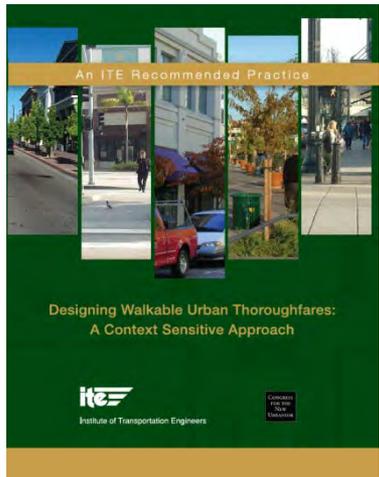
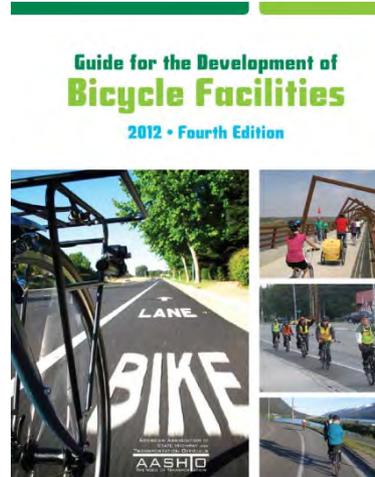
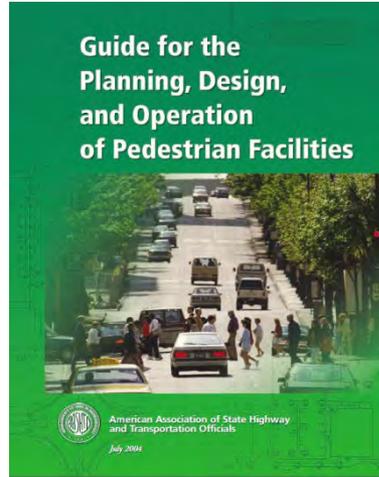
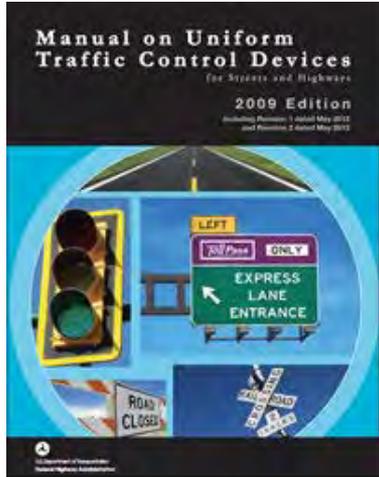
# Key Findings

- Motorists do not yield to crosswalk users approximately half of the time
- Restricted visibility at crossing
- Confusion with intersection control change
- Lack of ADA compliance
- Vehicles are speeding on Upper Arborway
- Need to upgrade signalized intersection with countdown pedestrian indications

# Previous Planning Projects

- Crosswalk and Pathway Treatment Guidelines for the Emerald Necklace Parks (2012)
- “Gateway to the Arborway” Landscape Treatment Plans (2008)
- Parkways Preservation Treatment Guidelines (2006)
- Arborway Master Plan (2004)
- Emerald Necklace Master Plan (2001)

# Guidelines and Best Practices



# Considered Improvements

- Pavement Markings
  - High visibility crosswalk
  - Yield lines
  - Zig zag markings
- Signs
  - Warning signs
  - In-street crosswalk sign
- Crossing Control
  - Signalize
  - Stop control
  - Pedestrian beacon
  - Rapid flash beacon
- Sight Distance
  - Adjust fence
  - Move crossing
- Geometric
  - ADA ramps
  - Modify median
  - Drainage
  - Lighting
- Traffic Calming
  - Curb extension
  - Raised crosswalk
  - Speed bumps
  - Rumble strips
  - Chicane parking
  - In pavement lights
  - Speed enforcement

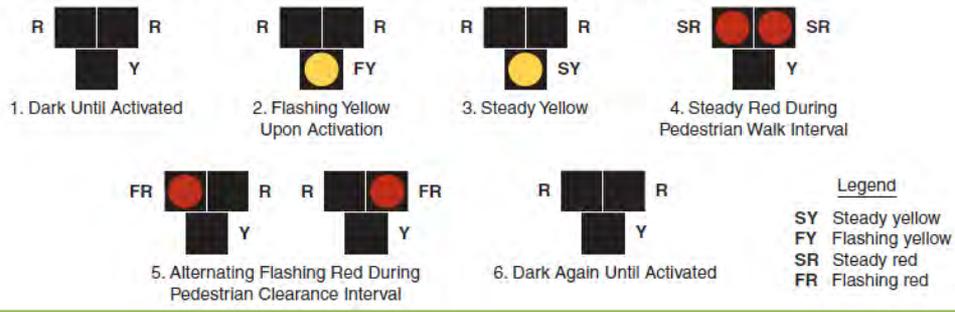
# Raised Crosswalk



# Pedestrian Hybrid Beacon



Figure 4F-3. Sequence for a Pedestrian Hybrid Beacon



Source: MUTCD

# Rectangular Rapid Flash Beacon



Photo Credit: MUTCD

# Upper Arborway Signal Control Evaluation

- Reviewed to determine if a traffic signal is an acceptable control at this location

Figure 4C-7. Warrant 4, Pedestrian Peak Hour



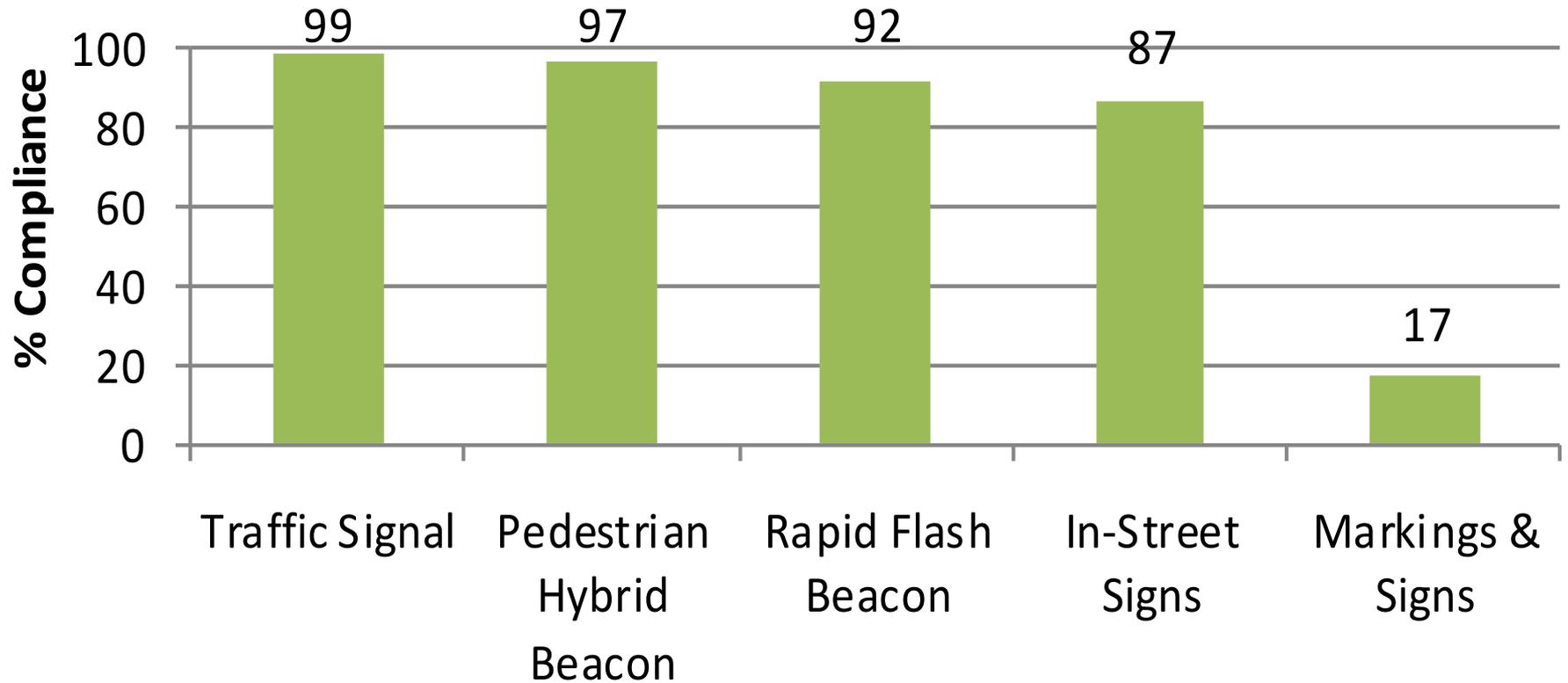
\*Note: 133 pph applies as the lower threshold volume.

# Upper Arborway Stop Control Evaluation

- Reviewed to determine if a stop sign is an acceptable control at this location.
  - Does not meet guidance in MUTCD
  - Unwarranted stop signs decreases compliance
  - STOP signs do not control speeds effectively
  - False sense of security



# Considered Improvements: Motorist Compliance vs. Crossing Treatments

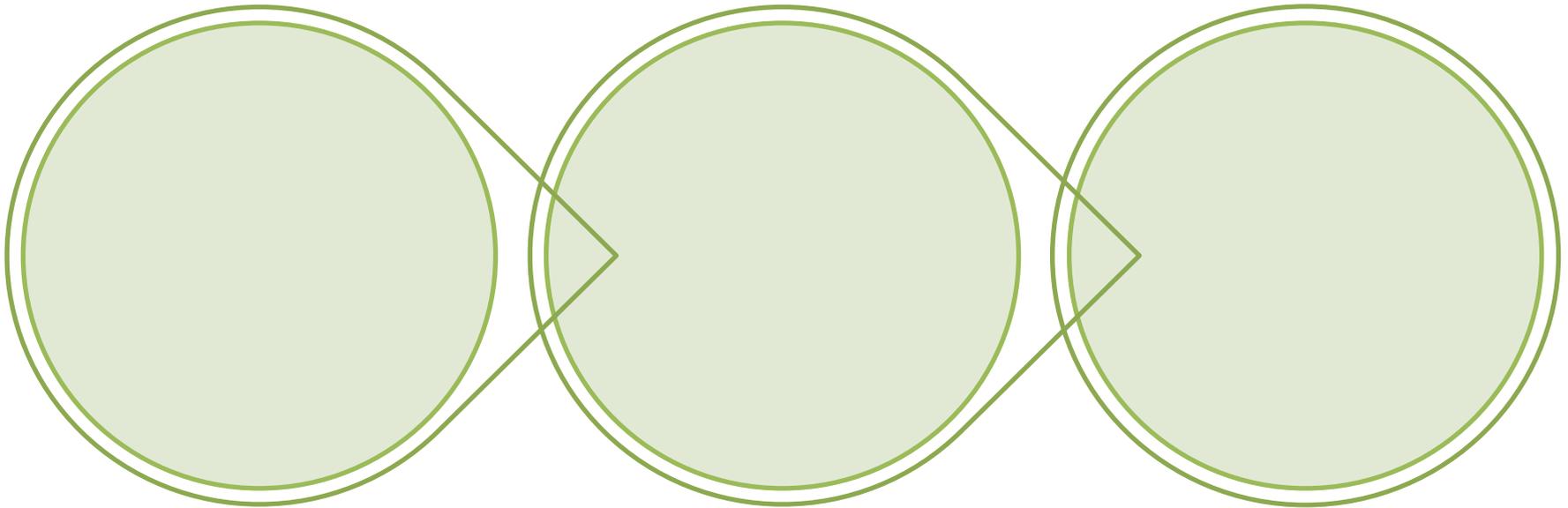


Source: Federal Highway Administration

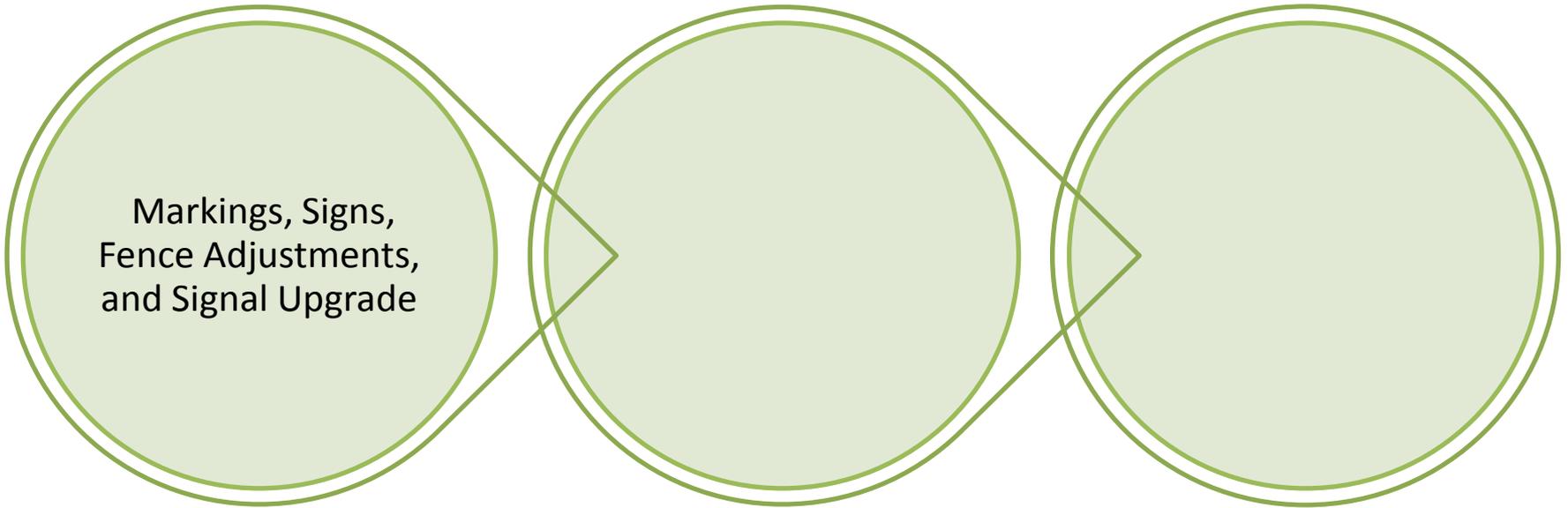
# Objectives

- Improve yielding compliance between users
- Improve visibility between users
- Clearly indicate any change in control, if applicable
- Provide behavior indications to all users
- Reduce crossing distance
- Reduce vehicular speed on Upper Arborway

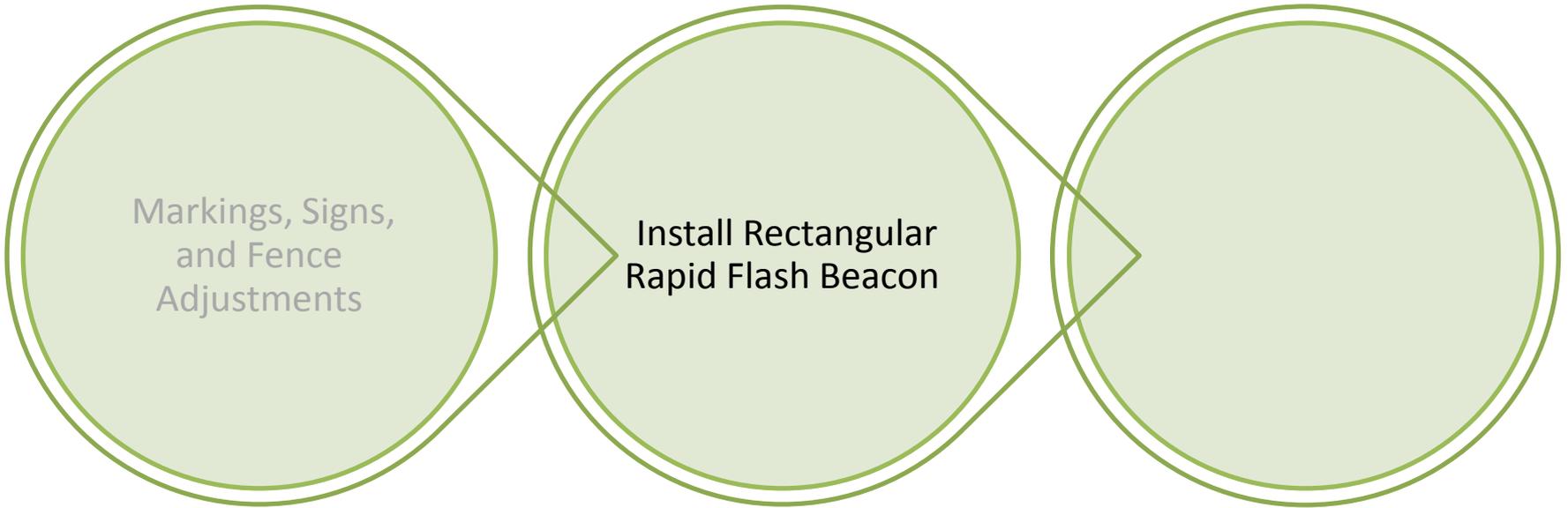
# Recommend Tiered Approach



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# Recommend Tiered Approach

Markings, Signs,  
and Fence  
Adjustments

Install Rectangular  
Rapid Flash Beacon

Construct  
Geometric  
Modifications  
including ADA  
Ramps, Median,  
and Curb Extension





# Existing Conditions



ARBORWAY SB  
ONE WAY

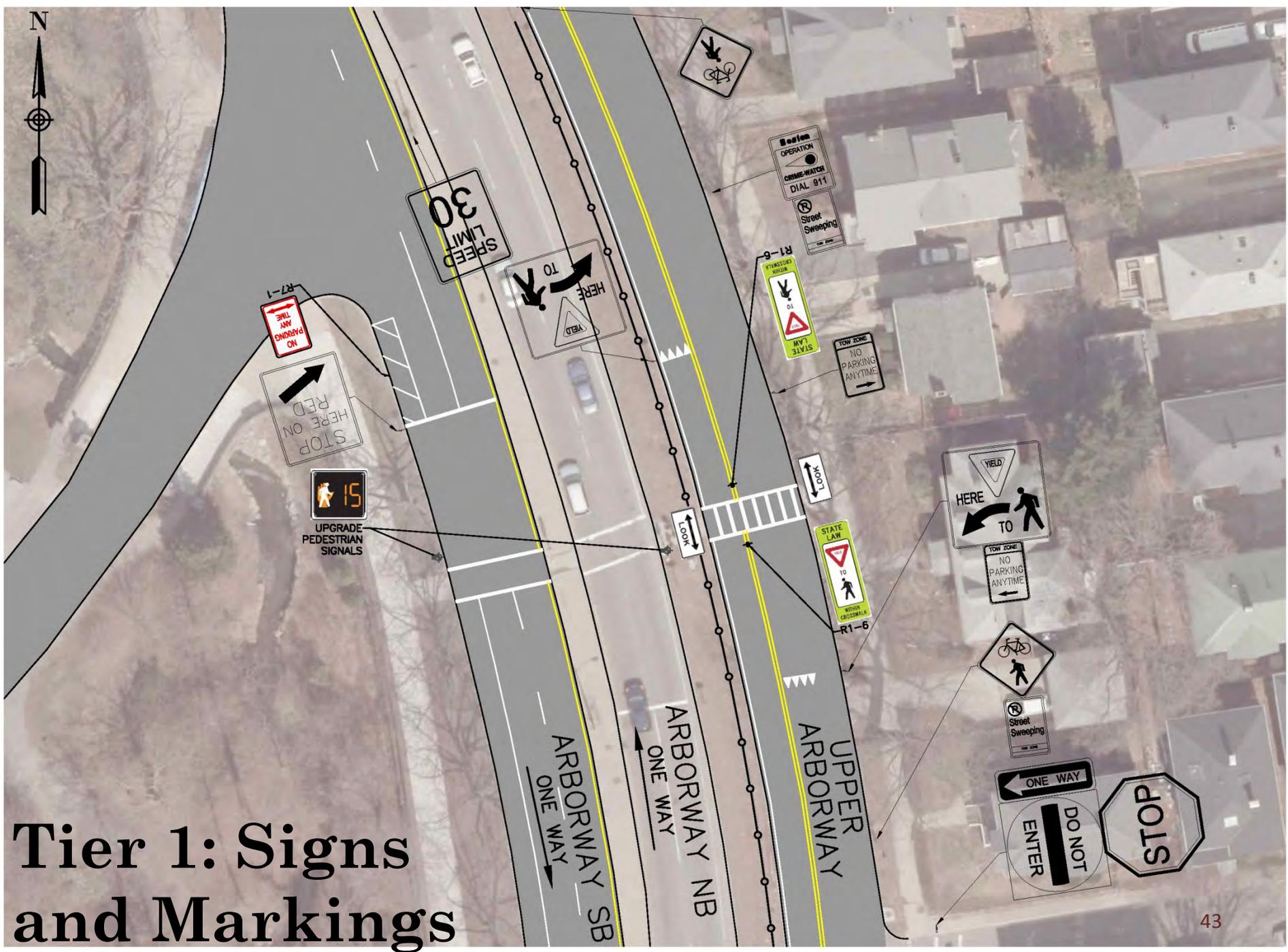
ARBORWAY NB  
ONE WAY

UPPER  
ARBORWAY





# Tier 1: Signs and Markings



# Tier 1: Signs and Markings





# Tier 2: Rectangular Rapid Flash Beacon



W11-1  
W16-7P  
R10-25  
PUSH BUTTON TO TURN ON WARNING LIGHTS



W11-1  
W16-7P  
R10-25



ARBORWAY SB  
ONE WAY

ARBORWAY NB  
ONE WAY

UPPER  
ARBORWAY



# Objectives & Recommendations

	Summary of Costs	Improve Yielding Compliance	Improve Visibility	Clear Change in Control	Provides Behavior Indication	Reduce Speed	Reduce Crossing Distance
First Tier: Markings, Signs, Fence, and Signal Upgrades	\$\$	✓	✓		✓		
Second Tier: Rectangular Rapid Flash Beacon	\$	✓	✓	✓	✓		
Third Tier: Geometric Modifications	\$\$\$	✓	✓	✓	✓	✓	✓

# Next Steps

- Public comment period open until May 20<sup>th</sup>
- Develop recommendations report



# Additional Information

For more information:

- Web: <http://www.mass.gov/eea/agencies/dcr/public-outreach/public-meetings/>

If you have comments:

Email: [dcr.updates@state.ma.us](mailto:dcr.updates@state.ma.us)

Call: 617-626-4974

Write: Department of Conservation and Recreation, Office of Public Outreach,  
251 Causeway Street, Suite 600, Boston, MA 02114

Note: Public comments submitted to DCR by email or letter will be posted on the DCR website in their entirety, and no content, including personal information, will be redacted.

If you have questions or concerns or would like to be added to an email list to receive DCR project-related or general announcements:

Email: [MassParks@state.ma.us](mailto:MassParks@state.ma.us)

Call: 617-626-4973