Factors in Considering Capacity Allocation

- Safety for all users
- Accessibility for all users
- Maintenance of emergency evacuation route
- Preservation of historic structure
- Avoidance of congestion
- Connectivity to local streets
- Mobility for the region
Bridge Users

- MBTA riders
- TMA buses and vans
- Recreational and tourist buses
- Emergency vehicles
- Retail/delivery trucks
- Passenger vehicles
- Motorcycles
- Pedestrians
- Bicyclist
- Boaters
Current Allocation of Capacity

Existing Cross Section at Mid-Point of Bridge
Roadway Classification and Design Parameters

- Bridge roadway (Route 3) is classified as an *Urban Principal Arterial* roadway and is part of the *National Highway System*. Classification informs design guidelines:
  - i.e. lane widths, design speed, offset to obstructions
  - Unrestricted vehicular use
  - Unrestricted vehicular loads
- Design Exception may need to be approved by DOT and FHWA:
  - Reductions to lane widths, shoulder widths, turning radii, etc.
- Main bridge structure will not be widened
- MBTA Red Line reservation provisions need to be addressed
Understanding Traffic Design Criteria
## Breaking Down *Level of Service (LOS)*

- LOS is a way to determine the effectiveness of a roadway or intersection in terms of:
  - Speed and travel time
  - Freedom to maneuver
  - Traffic interruptions
  - Comfort and convenience
- LOS ranges from A through F
  - LOS A – least congested, traffic flows at or above posted speed limit
  - LOS F – most congested, traffic flow is slowed to minimal movement, road/intersection generally has more demand than capacity
- Many urban areas experience LOS D, E or F and the grade may fluctuate throughout the day as demand changes
Breaking Down *Queuing Length*

- Queuing length refers to the length of vehicles waiting at a traffic signal for a green cycle
- The less resources for vehicle storage (lane availability), the longer the queue becomes
Breaking Down Volume over Capacity (V/C)

- V/C is the ratio of the current flow rate (volume) to the capacity of the facility.
- V/C indicates the quality of the operations at an intersection.
- A V/C ratio greater than 1.0 can lead to a failure in the intersection to adequately process the arriving demand.
- Desirable V/C ratios range between 0.85 and 0.95.
- The higher the V/C ratio, the longer the queue length.
Stepping back to the ENF comments
User Accommodations

Public Comments
- Better balance of space among all users
- Reflect modern standards for pedestrian and bicycle facilities, including ADA compliance
- Design alternatives inconsistent with objective of creating healthier, more sustainable transportation system

MassDOT Responses
- Limited space on the bridge has been a great challenge as we work to provide improved accommodations for all modes of travel
- Alternative 1 in the ENF proposed the addition of 10ft sidewalks with 8.5ft of usable space and 5ft bike lanes to enhance pedestrian and bicycle use and safety
Background – ENF Comments

Traffic Growth Rate Assumptions

Public Comments

- Need to be modified to be more in line with current practices
- Growth factor used in the ENF are significantly greater than on-going projects in Boston and Cambridge
- Does not reflect the reduction in traffic on the bridge over the past 5 to 10 years

MassDOT Responses

- Growth rates for traffic modeling provided by CTPS
- Typical growth rates are calculated at 1.0% growth per year
- Currently using a 0.6% growth rate for design
- Any growth in the level of traffic is not a factor in the bridge design. No additional capacity is being proposed for auto travel.
Background – ENF Comments

Traffic Count Data

Public Comments
- Traffic counts should be updated as the counts provided in the ENF are from 2005

MassDOT Responses
- First counts done in September 2005 and May 2006 with minimal differences (peak hour volumes)
- Counts done in the Fall of 2008
- Received counts from the City of Boston in November 2009
- Current analysis reflects 2009-2010 counts
Longfellow Bridge Average Weekday Daily Traffic Volumes - Vehicles

Source: CTPS Historical Count Data
## Bicycle and Pedestrian Counts

<table>
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<th>Spring 2010</th>
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<tbody>
<tr>
<td></td>
<td>Sep 23 and 26</td>
<td></td>
<td>May 11 and 16</td>
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<tr>
<td></td>
<td>Bicycle</td>
<td>Pedestrian</td>
<td>Bicycle</td>
<td>Pedestrian</td>
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<tr>
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<td>914</td>
<td>330</td>
<td>748</td>
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<td>(4:30 to 6:30)</td>
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<td>478</td>
<td>135</td>
<td>608</td>
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<tr>
<td>(12:00 to 2:00)</td>
<td>598</td>
<td></td>
<td>743</td>
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</tr>
</tbody>
</table>

Bicycle and pedestrian counts performed by Halvorson Design Partnership, in conjunction with Alta Planning and HDR, as part of the *Charles River Basin Pedestrian and Bicycle Study for Pathways and Vehicular Bridges* project.

Counts were taken at the mid-point of the bridge, and include both directions.
Evaluated Alternatives from the Draft Environmental Assessment (EA) *

*The Draft EA was withdrawn from submittal to Federal Highway in May, 2010
Bridge Rehabilitation and Restoration
Boston-Bound Evaluated Alternatives

1) 2 lane approach – 3 lane release to Charles Circle
2) 2 lane approach – 2 lane release to Charles Circle
3) 1 lane approach – 3 lane release to Charles Circle
4) 1 lane approach – 2 lane release to Charles Circle
2 lane approach – 3 lane release to Charles Circle

- Vehicular and bicycle lane widths are narrower than MassDOT design guidelines
- Provides ADA compliant sidewalks and dedicated bike lanes
- Maintains current queue lengths and delays
- Requires relocation of walls on Boston side of the bridge
  - north and south sides
• Vehicular and bicycle lane widths are narrower than MassDOT design guidelines
• Does not provide ADA compliant sidewalk widths
• Results in excessive queue lengths on the bridge
• Impacts on air quality due to vehicular idling on the bridge
• Impacts to adjacent communities and infrastructure with drivers seeking alternate routes
• Wall on south side would not have to be relocated
1 lane approach – 3 lane release to Charles Circle
1 lane approach – 2 lane release to Charles Circle

- Provides vehicular and bike lane widths that meet MassDOT design guidelines
- Provides 16 ft wide sidewalks and 6 ft wide dedicated bike lanes
- Results in excessive queue lengths on the bridge
- Impacts on air quality due to vehicular idling on the bridge
- Impacts to adjacent communities and infrastructure with drivers seeking alternate routes
- Requires the use of the bike lane to accommodate emergency vehicles and disabled vehicles
1 lane approach - video

- The following video provides a visual analysis of the 1 lane configuration over the bridge
- The lane set-up took place on December 3, 2009
- The lane set-up was done to allow for routine bridge inspection work
Task Force Objectives

- To develop a consensus recommendation regarding the cross section design that will receive a full analysis and evaluation and be included in the Longfellow Bridge EA submittal to Federal Highway
- Recommendation will provide equitable distribution of space for all user groups
Expanded Design Strategies

This is an opportunity of a lifetime to provide access for all users across the Longfellow Bridge.

This opportunity will allow all of us to bring new ideas and suggestions to the discussion:

- Adjust lane widths
- Improve pedestrian connectivity
- Bike boxes at Charles Circle
- And the list goes on………..
Discussion and Question Period