Alewife Working Group Update
December 14, 2017
Agenda

- Alewife Key Objectives
- Transportation Findings + Recommendations
- Discussion
### Net New Housing Units at 60% Buildout (2030)

- Quadrangle: ~725 units
- Shopping Center: ~745 units
- Jerry’s Pond: ~310 units
- Fresh Pond Parkway: ~330 units

### Net New Jobs at 60% Buildout (2030)

- Quadrangle: ~7,020 jobs
- Shopping Center: ~1,030 jobs
- Jerry’s Pond: ~350 jobs
- Triangle: ~720 jobs
- Fresh Pond Parkway: ~170 jobs

#### Proposed Land Use

- Residential
- Commercial
- Mixed-use Retail
- Mixed-use Industrial
- Live/Work Space

**NOTE:** Graphic illustrates 100% buildout.
Alewife Plan Update

Transportation Features

• New denser & connected street grids
• New sidewalks and crosswalks
• Shared use path (Pond-Quad-Mall)
• TDM programs
• Reduced parking ratios
• Shuttles to Alewife
Transportation Analysis

- Traffic Volume
- Critical Sums
- Walk to High Quality Transit
- Intersection Density
- Activity Density
- Distance to Bicycle Facilities
- Land Use Mix
Metric: Vehicle Volumes

- Vehicle volume decreased at majority of intersections
- Consistent with region-wide trends
- Higher volume at Route 2
Calculating New Trips

NEW DEVELOPMENT

PERSON TRIPS

PERSON TRIP BY MODE

CAR TRIPS

MODAL SPLIT

PEDESTRIAN

TRANSIT

BICYCLE

SQUARE FEET BY LAND USE

ITE RATE AND ACS FACTOR

VEHICLE OCCUPANCY RATE
Auto Mode Share

Percentage of trips by car (SOV and HOV)

- Residential
- Employee
Net New Auto Trips (PM Peak) in Study Area

Existing Zoning 2030

Arrive: 375 - 426 = -51
Depart: 1,041 - 229 = 812

Proposed Zoning 2030

Arrive: 533 - 381 = 152
Depart: 1,773 - 205 = 1,568

2,071 Total New Auto Trips

2,892 Total New Auto Trips
Total Volume By Intersection

1. Alewife Brook Parkway & Route 2
2. Alewife Brook Parkway & Cambridge Park Drive
3. Alewife Brook Parkway & Rindge Ave.
4. Alewife Brook Parkway & Concord Ave Rotary
5. Concord Ave & Fresh Pond Parkway Rotary
6. Concord Ave & Fawcett St.
7. Concord Ave & Blanchard Rd.

- 2005
- 2016
- 2030 Existing Zoning
- 2030 Proposed Zoning
Metric: Critical Sums

- Critical Sums Analysis is a planning tool used to compare build-out scenarios
- Compares how different levels of build-out impacts specific intersections in general way
- Not a traffic engineering tool
- Same methodology used in prior planning studies:
  - 2001 Citywide Rezoning
  - 2001 ECaPS
  - 2004 Concord-Alewife Plan
  - 2011 K2C2
Critical Sums Methodology

Critical movement volume at an intersection is the sum of all conflicting traffic movements (vehicles per hour).

- **Intersections** with **1,500** or fewer vehicles per hour considered to operate adequately, i.e. motorists will wait no more than two light cycles to get through the intersection.
- **Rotaries** with **1,800** or fewer vehicles are considered to operate adequately

When thresholds are exceeded, intersection operation starts to deteriorate exponentially.

Street 1: \((A+2) + D \; or \; (C+2) + B\), whichever is more
Street 2: \(E + H \; or \; G + F\), whichever is more

Critical Sum = Result of Street 1 + Street 2
## Critical Sums By Intersection

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing (2016)</th>
<th>2030 Existing Zoning</th>
<th>2030 Proposed Zoning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Volume</td>
<td>Critical Sum</td>
<td>Total Volume</td>
</tr>
<tr>
<td>1. Alewife Brook Parkway &amp; Route 2</td>
<td>5498</td>
<td>1699</td>
<td>5804</td>
</tr>
<tr>
<td>2. Alewife Brook Parkway &amp; Cambridge Park Drive</td>
<td>3844</td>
<td>1267</td>
<td>4370</td>
</tr>
<tr>
<td>3. Alewife Brook Parkway &amp; Rindge Ave.</td>
<td>3769</td>
<td>1305</td>
<td>4339</td>
</tr>
<tr>
<td>4. Alewife Brook Parkway &amp; Concord Ave Rotary</td>
<td>3388</td>
<td>2152</td>
<td>4409</td>
</tr>
<tr>
<td>5. Concord Ave &amp; Fresh Pond Parkway Rotary</td>
<td>3033</td>
<td>1375</td>
<td>3884</td>
</tr>
<tr>
<td>6. Concord Ave &amp; Fawcett St.</td>
<td>1350</td>
<td>708</td>
<td>2202</td>
</tr>
<tr>
<td>7. Concord Ave &amp; Blanchard Rd.</td>
<td>1955</td>
<td>1096</td>
<td>2661</td>
</tr>
</tbody>
</table>

Red = over threshold
Critical Sums By Intersection
Findings

- Traffic volumes have decreased in the study area since 2005
- Under existing zoning at 60% build out the same intersections are over the threshold as are today
  - Alewife Brook Parkway & Route 2
  - Alewife Brook Parkway & Concord Ave Rotary
- Under proposed zoning, almost all study area intersections are over the threshold
- Under proposed zoning, residential trips decrease, but employee trips increase
Strategies

• Efforts to decrease auto trips in the study are important today and more important for the future

• If Quad auto mode share is similar to the Triangle, Concord Ave & Blanchard Rd. is the only new intersection to reach the threshold
  – Improve infrastructure and adopt more aggressive TDM measures to improve mode share in the Quad
  – Reduce allowed commercial square footage (and thus employee-generated trips) in the Quad to a level that results in no new intersections exceeding the critical sums threshold
Enhanced Transportation Demand Management

Higher Feasibility:
- Contribute to and expand the offerings of local TMA
- Encourage additional carshare options for residents and workers who need occasional vehicle access
- Maintain parking availability by pricing parking for all uses, which also reduces driving demand
- Require subsidies for sustainable modes

Long-Term Possibilities:
- Establish remote park & ride lots (for vehicles and bicycles) and link to study area with shuttles
  - Shuttles can use bus-only infrastructure to rapidly access the station
Metric: Walk to High Quality Transit

- “High-quality” is generally defined as transit frequencies better than 15 minutes, which encourages car-free lifestyles
- Transit stations need to be within a reasonable 5-15 minute walk, depending on type of service

Today:
- 14% of buildings w/in 10 minute walk of Alewife Station
- 6% of buildings w/in 2.5 min walk of Hubway

Current Plan:
- 21% of buildings w/in 10 minute walk of Alewife Station
- 10% of buildings w/in 2.5 min walk of Hubway

Long-term Plan:
- 80-100% of buildings with access to high quality transit (Alewife Station or Concord Ave buses)
- 100% of building w/in 2.5 min walk of Hubway
Transit

**Higher Feasibility:**
- Increase number of Hubway stations

**More Difficult:**
- Increase bus service to 10 or 15 minute frequencies
- Invest in bus-only lanes into / out of Alewife Station
- Add a commuter rail station at Alewife and increase frequency of service

**Long-Term Possibilities:**
- Directly connect the Quadrangle with Alewife Station via a walk/bike connection across the tracks
- Urban Rail on the Fitchburg Line (Waltham – N.Station)

<table>
<thead>
<tr>
<th></th>
<th>Red Line Today</th>
<th>MBTA Bus Service Today</th>
<th>Future High Quality Bus Service</th>
<th>Additional Bus Trips Needed for HQ Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Headways</td>
<td>4.5 mins</td>
<td>17 mins</td>
<td>10 mins</td>
<td></td>
</tr>
<tr>
<td>Hourly Transit Vehicle Trips</td>
<td>11.5</td>
<td>3.5</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>Daily Transit Vehicle Trips</td>
<td>218</td>
<td>70</td>
<td>117</td>
<td>45</td>
</tr>
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</table>

*Diesel Mechanized Unit* (DMU) on freight tracks in Austin, TX
Metric: Intersection Density

- Connected grids are valuable for many reasons:
  - Walking and biking is significantly easier/direct and more enjoyable
  - Traffic is dispersed, reducing delay
  - Emergency services have alternative routes
- Intersection density gives a proxy measurement of connectivity and accessibility
- The best practice for intersection density “connected and open community” is 300 per square mile or ~300 ft blocks

Today:
- 96 intersections per square mile (study area)

Current Plan:
- 171 intersections per square mile

Central Square: 358 per square mile

Cambridge Average: 261 per square mile
More connections

- While current plan’s blocks are still larger than most Cambridge blocks, through-block pedestrian connections make the district very connected
- Additional connections between the Quad and the Mall and the Quad and the Triangle would further improve directness, dispersion, and safety
Metric: Activity Density

- With more to do nearby and more people to do it, dense places rely less on driving
- Activity density measures the amount of residents and jobs per acre as of 2010

- **Today:** 34
- **Preferred Scenario:** 74
- **Best Practice:** over 75

<table>
<thead>
<tr>
<th>Study Area</th>
<th>Activity Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only (existing) 34</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Preferred Scenario 74</td>
<td>2 - 5</td>
</tr>
<tr>
<td>Harvard Square 111</td>
<td>6 - 15</td>
</tr>
<tr>
<td>Central Square 90</td>
<td>16 - 30</td>
</tr>
<tr>
<td>East Cambridge 121</td>
<td>31 - 60</td>
</tr>
<tr>
<td>Alewife (at large) - 24</td>
<td>61 +</td>
</tr>
</tbody>
</table>

Average AD in 0.25 sq. mi window near Alewife: 24
Average AD in 0.25 sq. mi window near Harvard: 111
Average AD in 0.25 sq. mi window in Central: 90
Average AD in 0.25 sq. mi window in East Cambridge: 121
Support the Benefits of Density

Higher Feasibility:
• Establish an Alewife Mobility Task Force to coordinate multimodal transportation programs and improvements for all planned development and their prospective residents and employees

More Difficult
• Leverage autonomous transit/SAVs (shared autonomous vehicles) to attract “park once” and “car-free” lifestyles

Long-Term Possibilities:
• Create an independent transportation district based on development fees to subsidize improvements

Portland Streetcar Cost Estimate
$127 million Federal Project:
• Federal Transit Administration $75 million
• Local Improvement District $15 million
• Portland Development Commission $27 million
• Regional Funds $4 million
• System Development Charge $ 6 million
TOTAL FEDERAL PROJECT $127 Million
VEHICLES FROM STATE OF OREGON
$20 Million
TOTAL PROJECT $147 Million
**Metric:** Distance to Bicycle Facility

- Biking improvements have demonstrated a significant mode shift in a short time
- Today there are high comfort facilities near all sites (Concord Ave, ABP paths, Fresh Pond path, Minuteman, Belmont branch, Mystic River, Somerville Community Path, and Watertown branch underway)
- The preferred scenario adds facilities within each site, especially the quad

**Today & Current Plan:**
- All buildings consistently offer a five minute walk/ride to a “High Comfort” bicycle facility

**Best Practice:**
- More nearby common biking destinations (retail/eating/etc.)
Improve Amenity of Bicycle Network

**Higher Feasibility:**
- Close gaps in Citywide bicycle network to make more places closer
- Development in Alewife will increase what people on bikes can access locally

**More Difficult:**
- Significantly expand covered and secured bike parking
- Create an interoperable bike share network into Belmont & Arlington

**Long-Term Possibilities:**
- Add a connection between Quad and Triangle
- Connect Belmont path into the Quad
Metric: Land Use Mix

- A mix of land uses means a mix of trip destinations are nearby rather than a drive away
- Land use mix measures the amount of variety/diversity in a local area

Current Plan Mix of Uses

(land use diversity value: 0.76 on a scale of 0-1)
Capitalize on the Mix of Uses

**Higher Feasibility:**
- Focus on wayfinding within the new connected grids so that people walking, biking or driving can easily circulate from transit or “park once” to visit many uses on foot
- Wayfinding also encourages more walking & biking when walk/bike times are included

**More Difficult:**
- Promotion of even more local-serving uses to internally-capture more trips