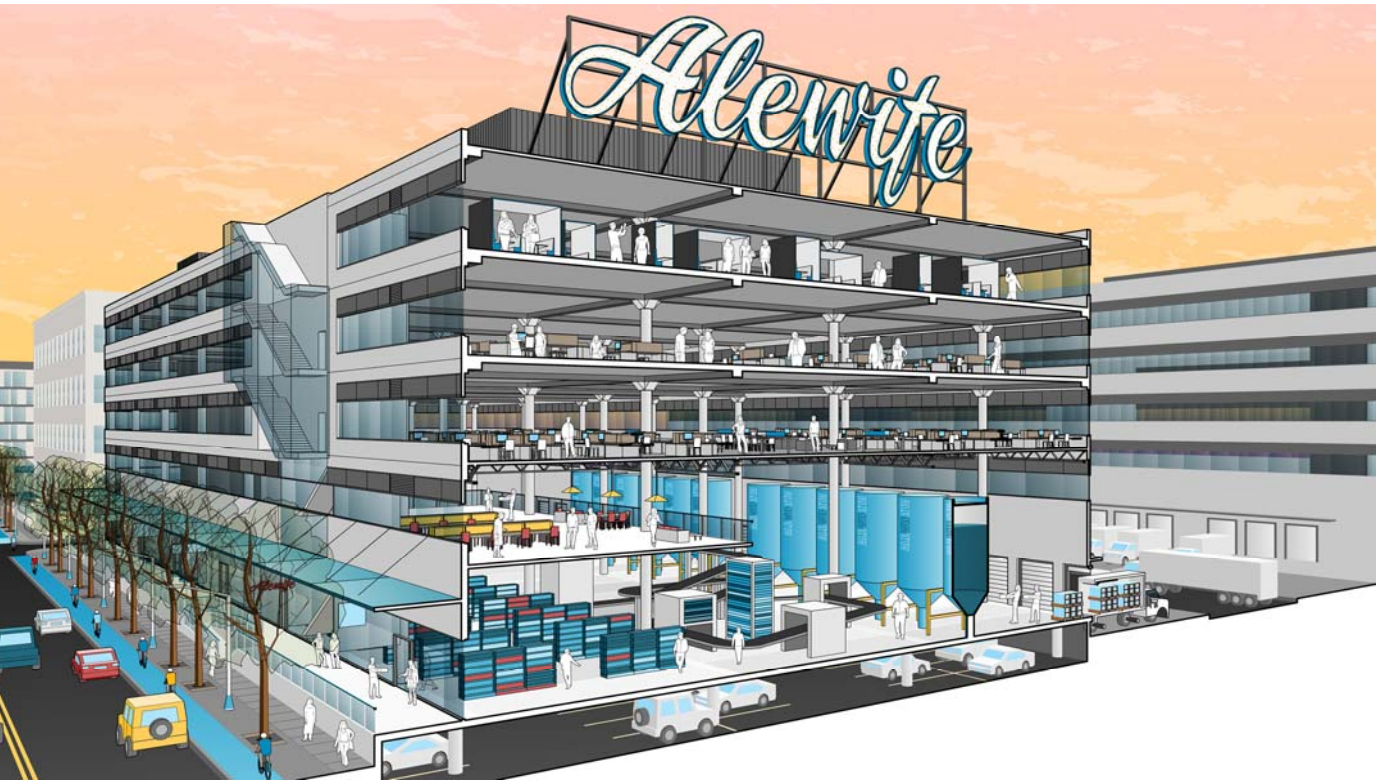
Envision Cambridge

Alewife Working Group Update

December 14, 2017

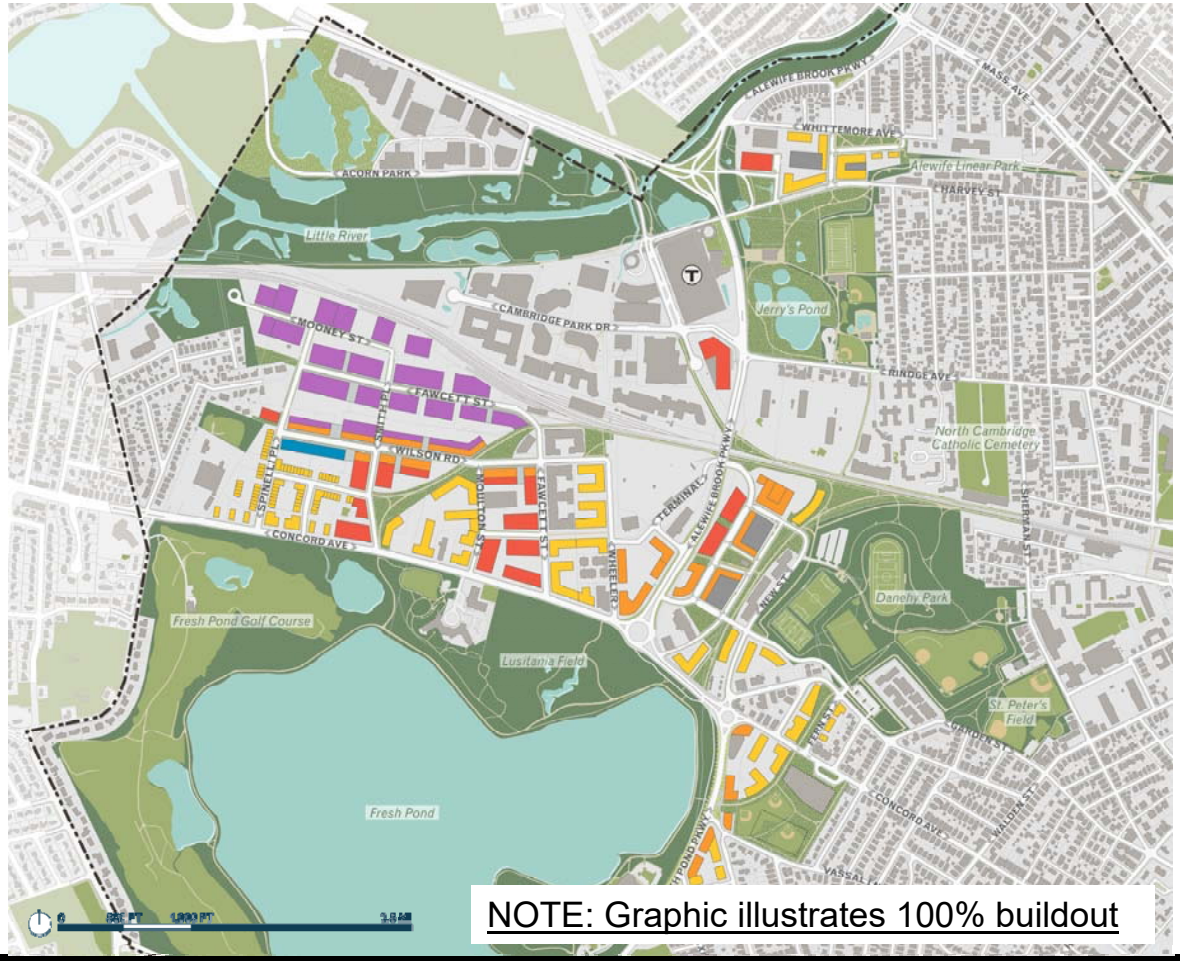
ENVISION CAMBRIDGE

Agenda



- Alewife Key Objectives
- Transportation Findings + Recommendations
- Discussion

Alewife: Proposed Land Use



NOTE: Graphic illustrates 100% buildout

Net New Housing Units at 60% Buildout (2030)	**~2,110 units**
– Quadrangle	~725 units
– Shopping Center	~745 units
– Jerry's Pond	~310 units
– Fresh Pond Parkway	~330 units

Net New Jobs at 60% Buildout (2030)	**~9,290 jobs**
– 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

Transportation Features

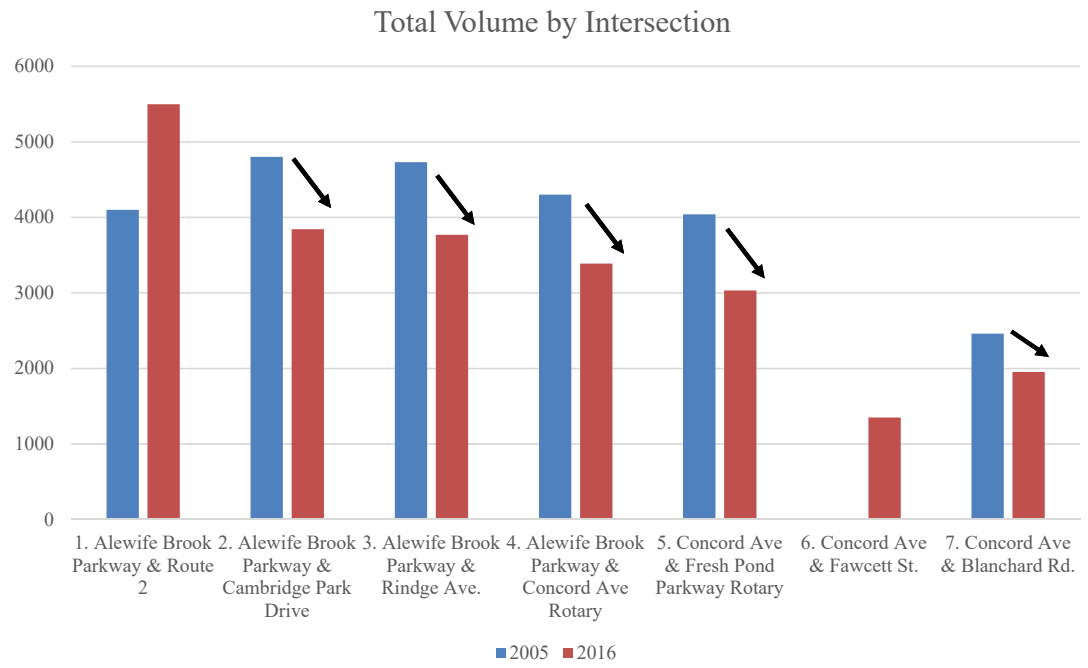
- New denser & connected street grids
- New sidewalks and crosswalks
- Shared use path (Pond-Quad-Mall)
- TDM programs
- Reduced parking ratios
- Shuttles to Alewife

Transportation Analysis

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

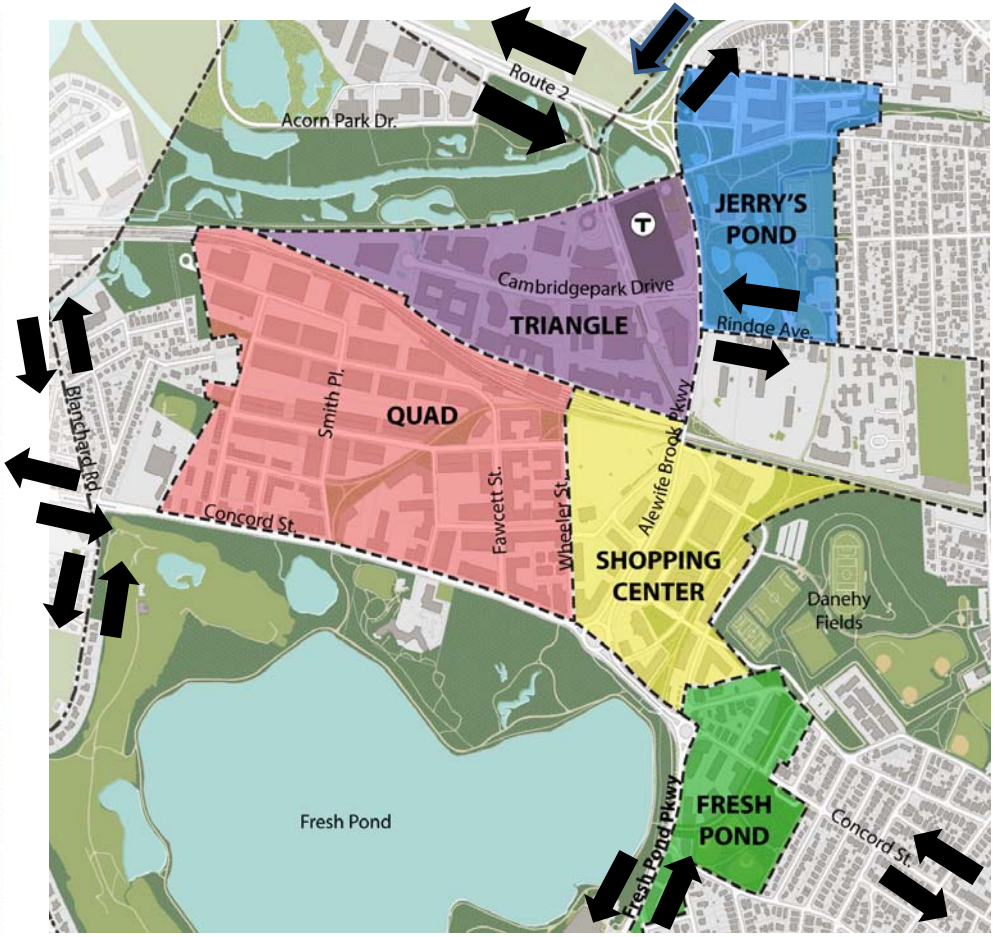
Metric: Vehicle Volumes

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

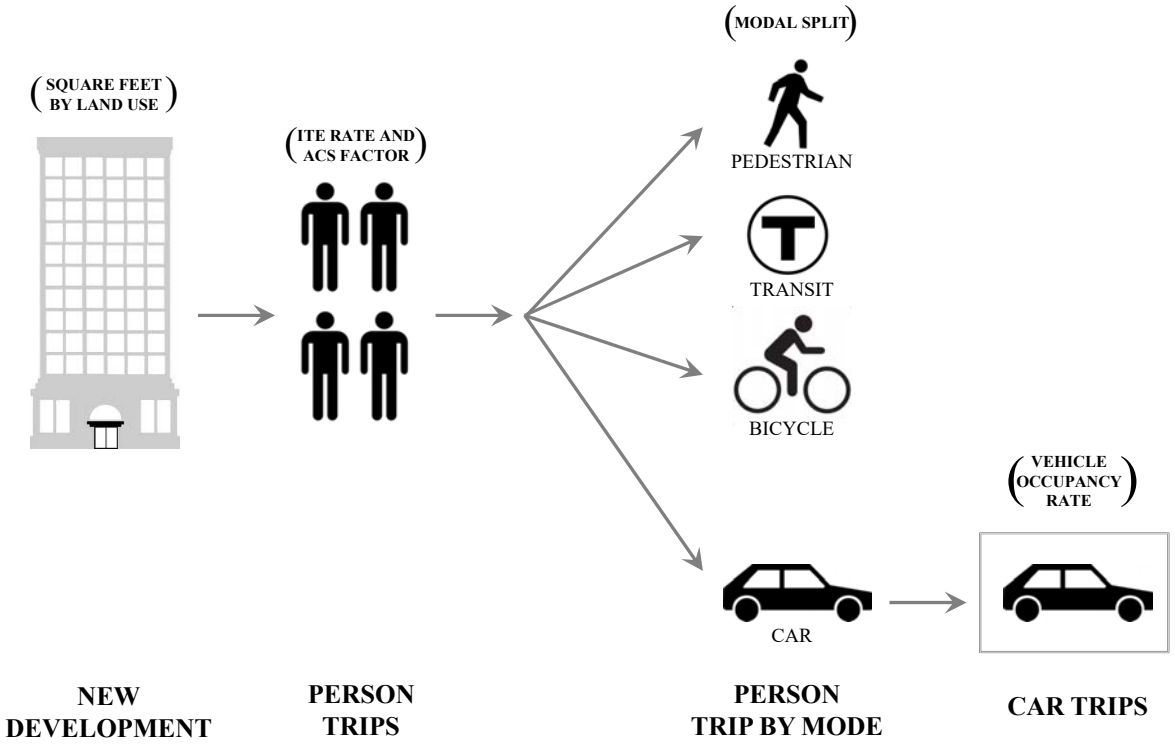


Study Area Intersections

Study Area Trips



Calculating New Trips

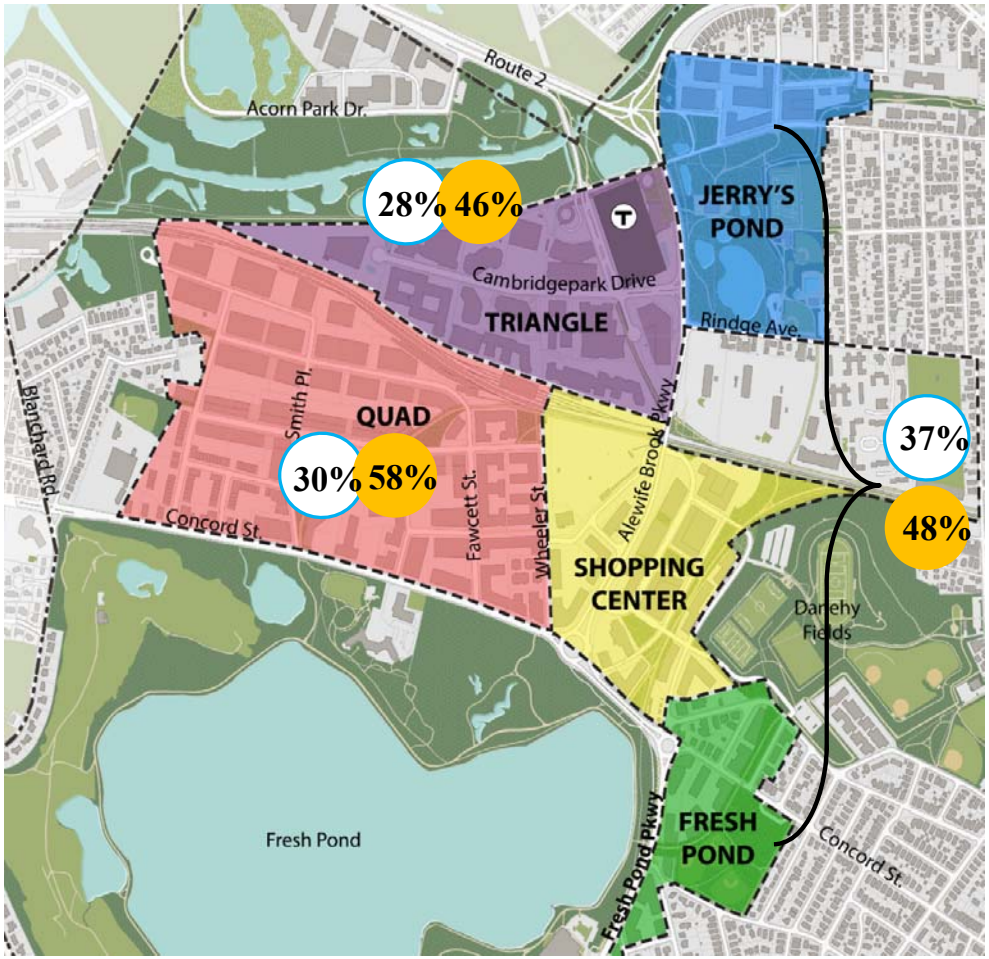


Auto Mode Share

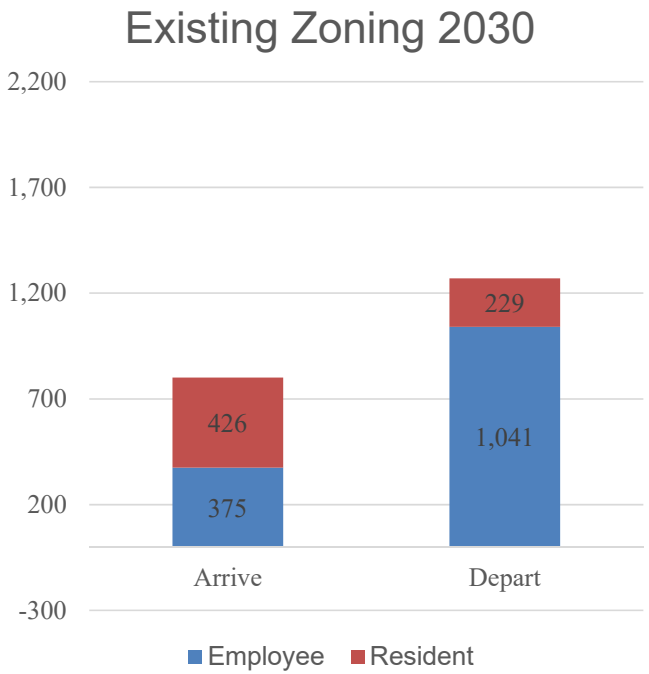
Percentage of trips by car (SOV and HOV)

Residential

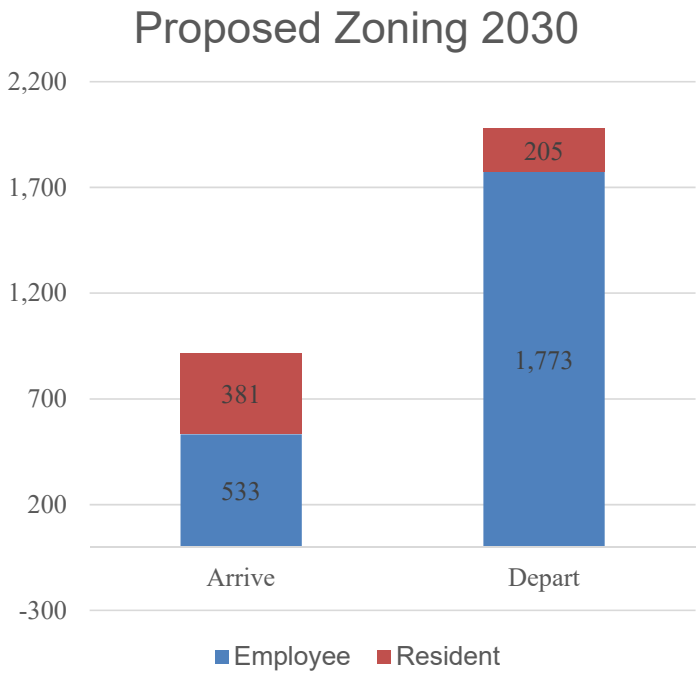
Employee



Net New Auto Trips (PM Peak) in Study Area

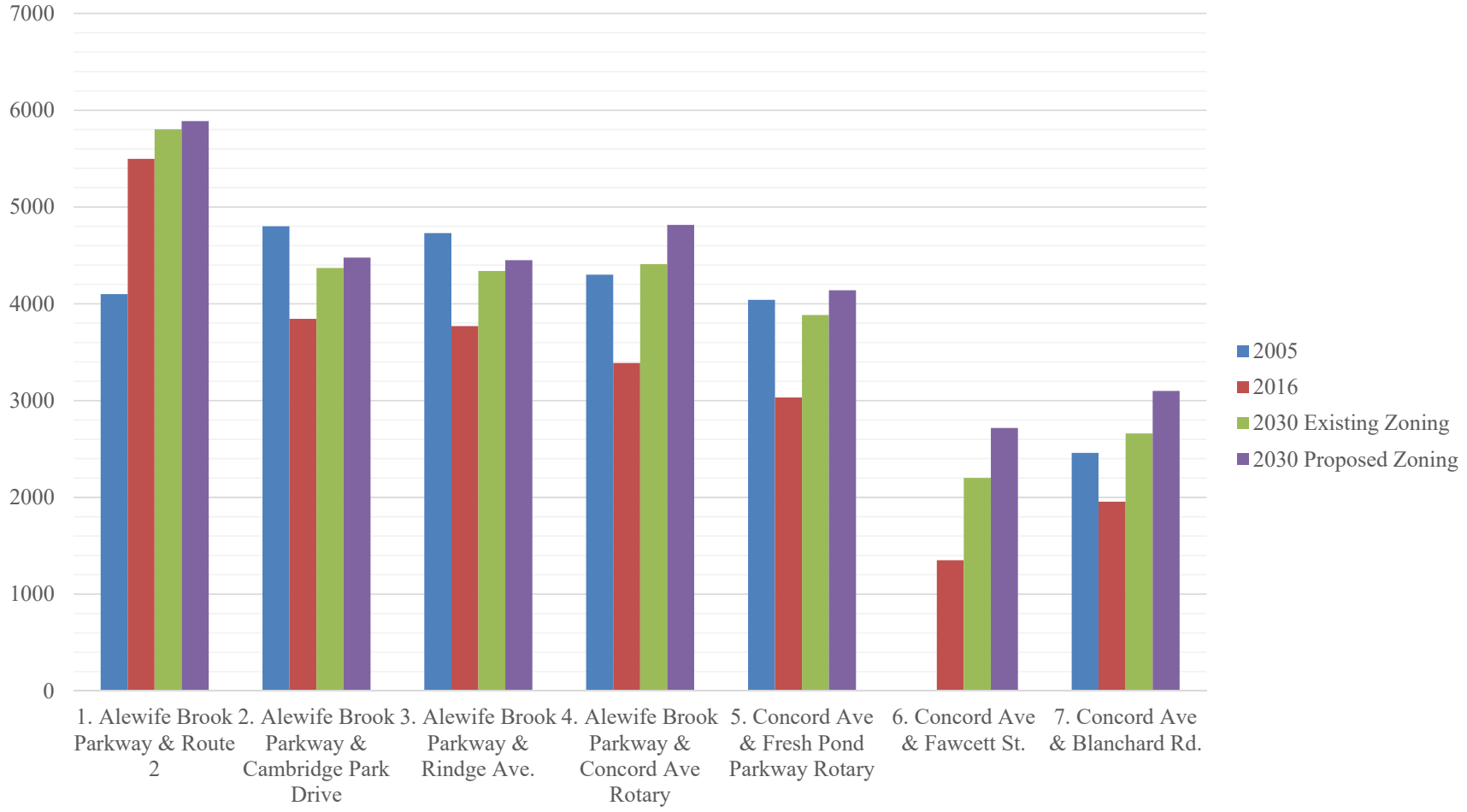


2,071 Total New Auto Trips



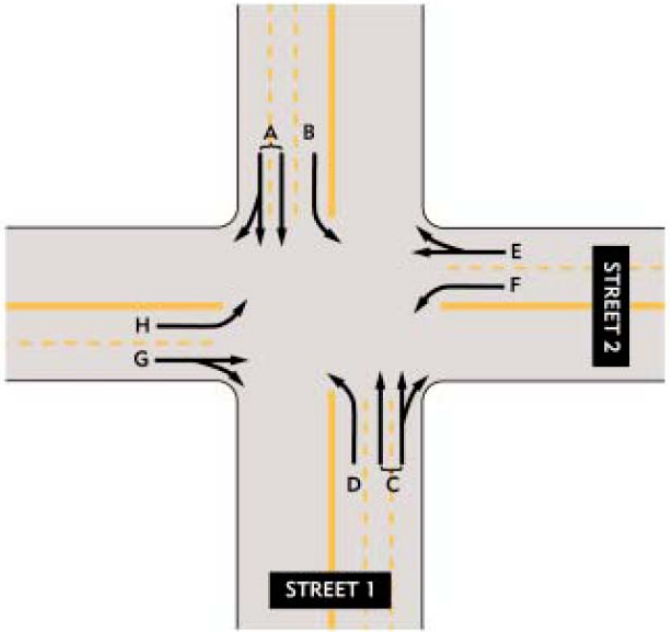
2,892 Total New Auto Trips

Total Volume By Intersection



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

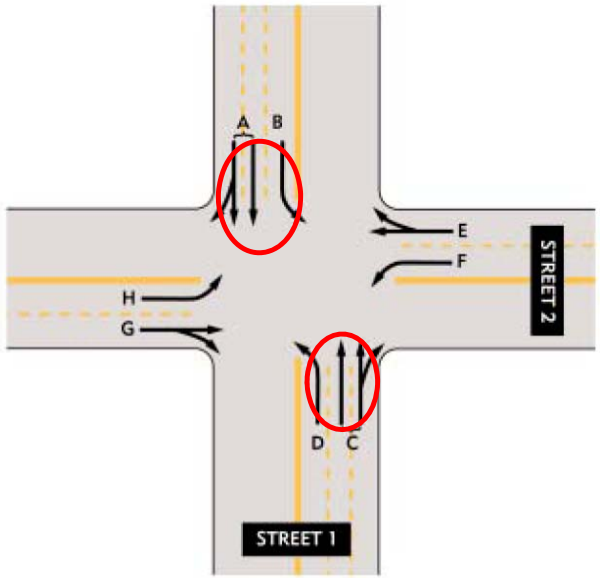


Critical Sums Methodology

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

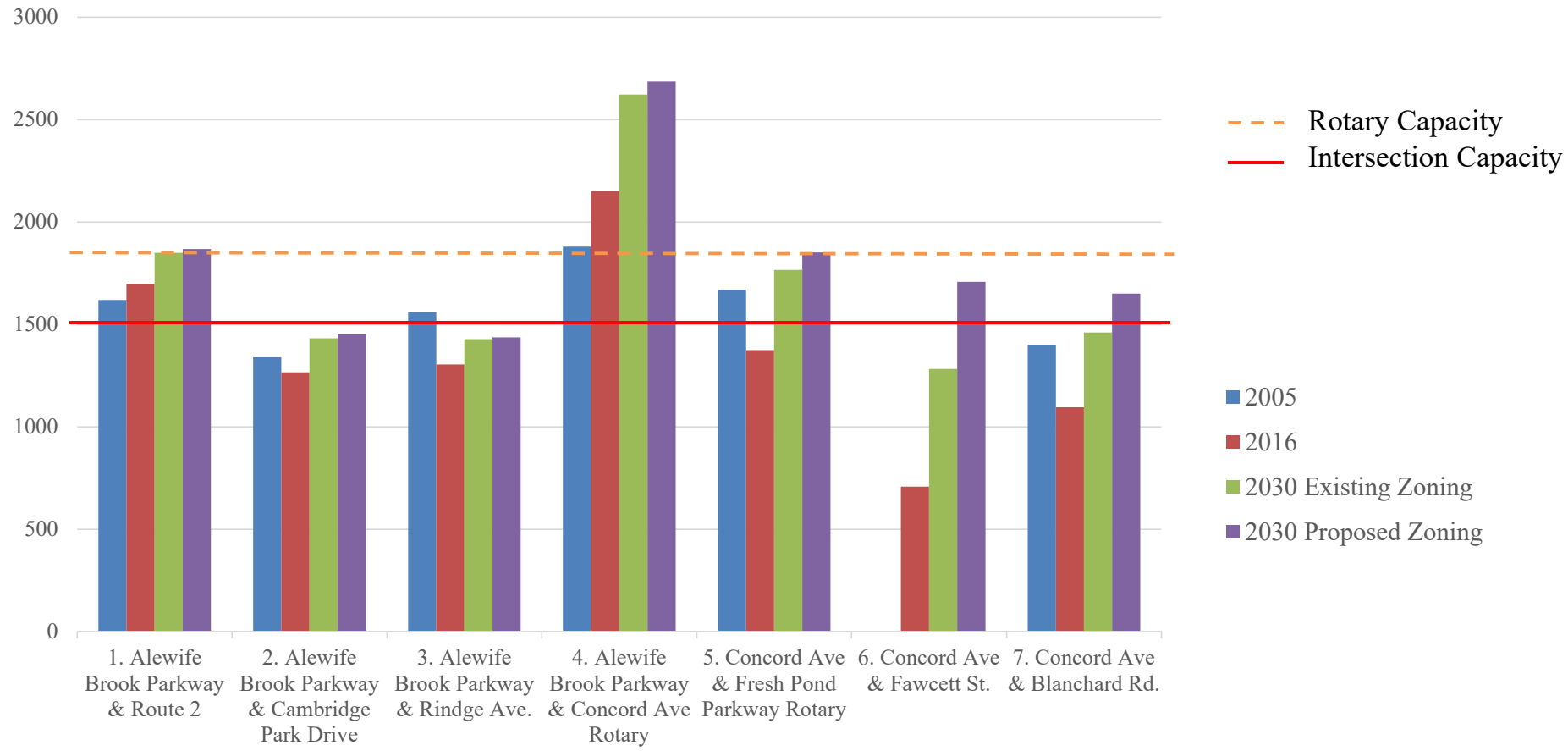
Critical Sum = Result of Street 1 + Street 2

Critical Sums By Intersection

	Existing (2016)		2030 Existing Zoning		2030 Proposed Zoning	
Intersection	Total Volume	Critical Sum	Total Volume	Critical Sum	Total Volume	Critical Sum
1. Alewife Brook Parkway & Route 2	5498	1699	5804	1850	5888	1868
2. Alewife Brook Parkway & Cambridge Park Drive	3844	1267	4370	1433	4477	1452
3. Alewife Brook Parkway & Rindge Ave.	3769	1305	4339	1429	4450	1437
4. Alewife Brook Parkway & Concord Ave Rotary	3388	2152	4409	2622	4815	2686
5. Concord Ave & Fresh Pond Parkway Rotary	3033	1375	3884	1766	4139	1852
6. Concord Ave & Fawcett St.	1350	708	2202	1283	2718	1708
7. Concord Ave & Blanchard Rd.	1955	1096	2661	1461	3100	1651

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

AlewifeTMA

Metric: Walk to High Quality Transit

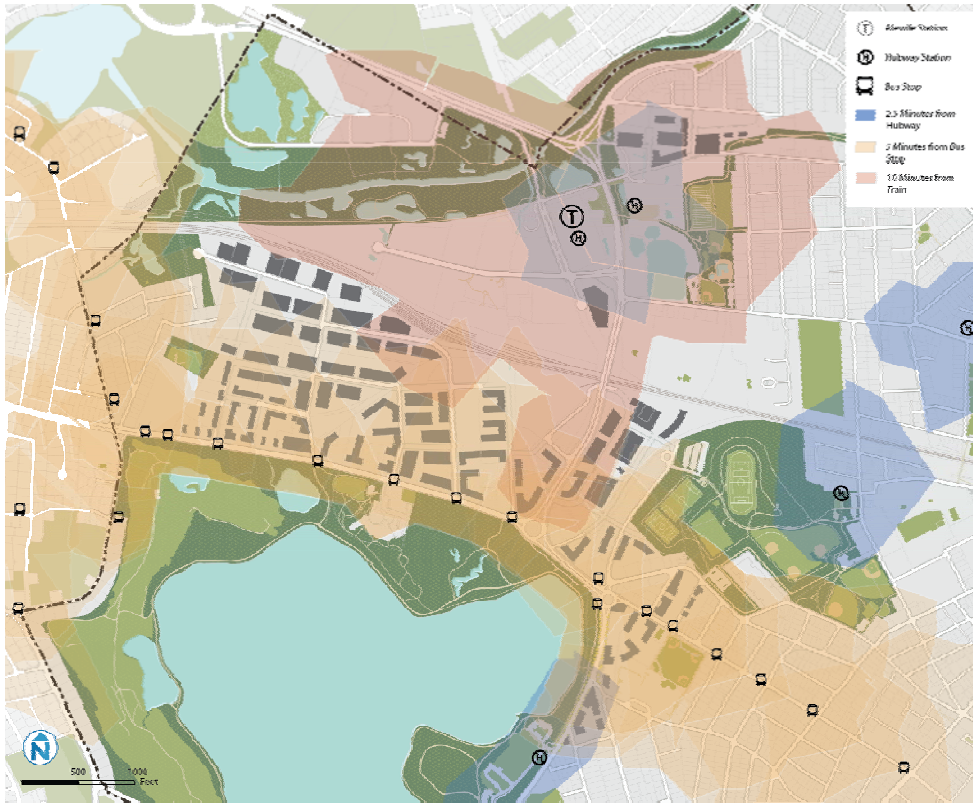
- "High-quality" is generally defined as transit frequencies better than 15 minutes, which encourages car-free lifestyles
- Transit stations need to be within a reasonable 5-15 minute walk, depending on type of service

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

Analysis with Bridge:



Walk areas from building centroids

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)

	Peak Hour Transit Frequencies			
	Red Line Today	MBTA Bus Service Today	Future High Quality Bus Service	**Additional Bus Trips Needed for HQ Service**
Transit Headways	4.5 mins	17 mins	10 mins	
Hourly Transit Vehicle Trips	11.5	3.5	6	**2.5**
Daily Transit Vehicle Trips	218	70	117	**45**

"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

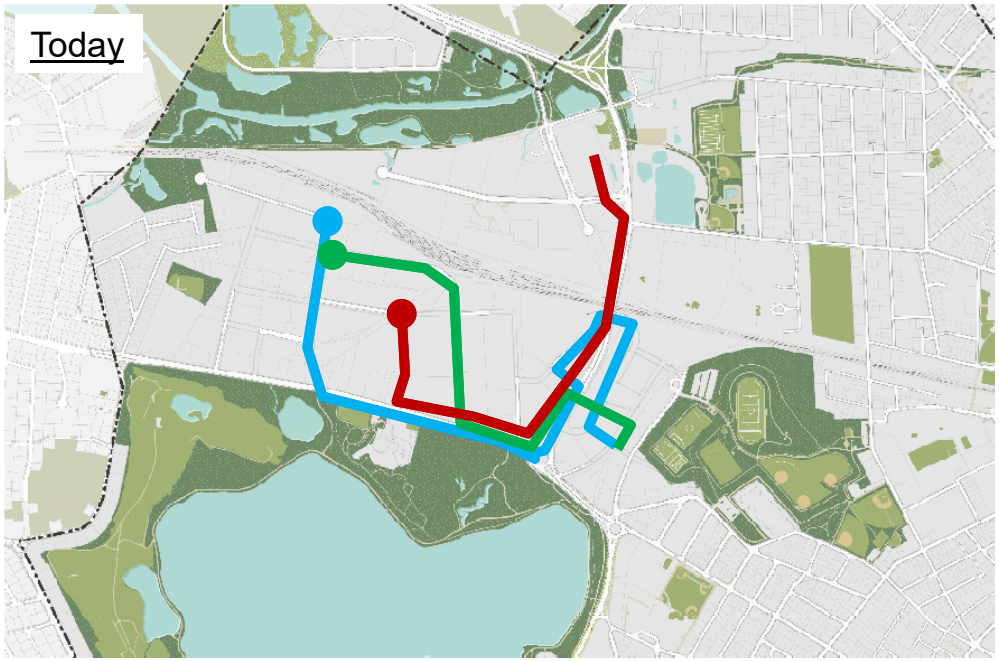
358 per square mile

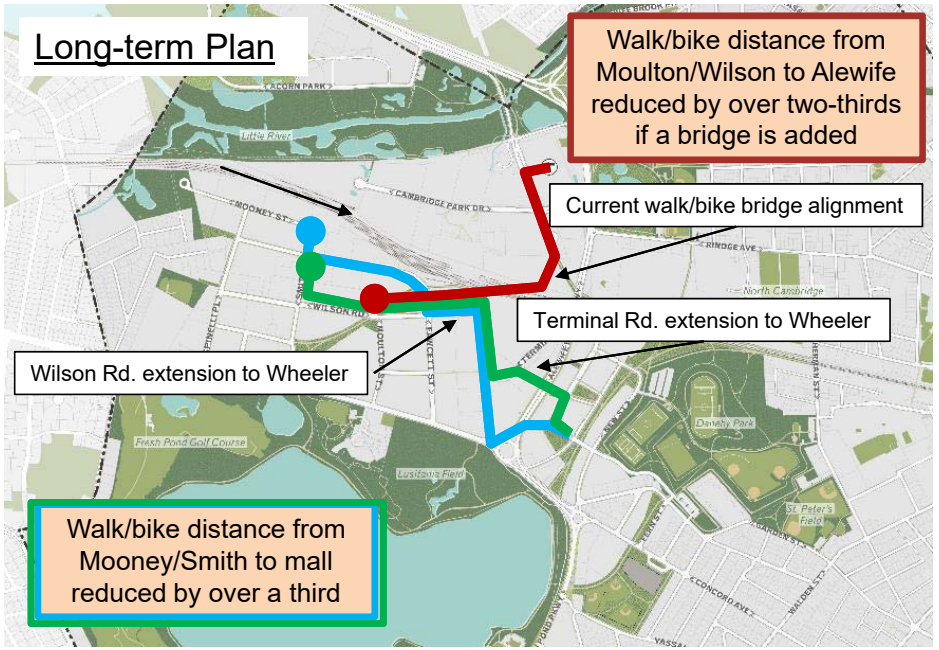
Cambridge Average

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

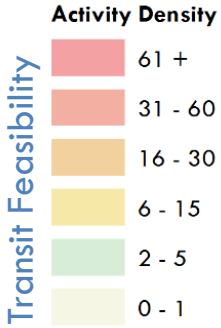


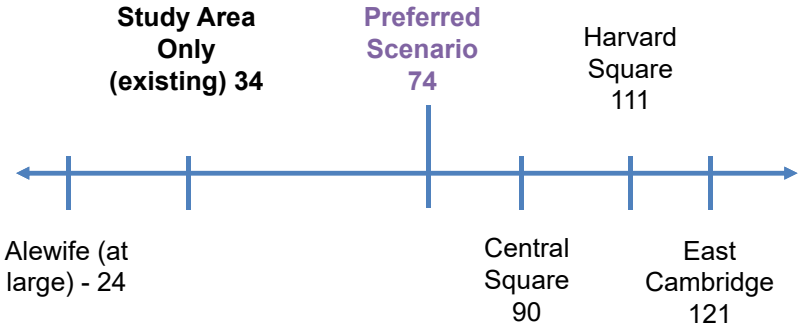


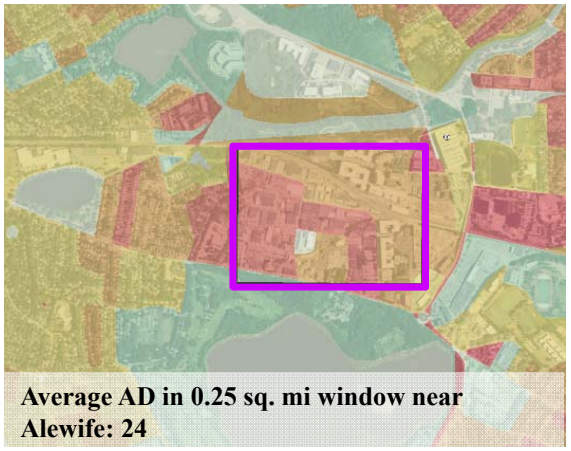
Metric: Activity Density

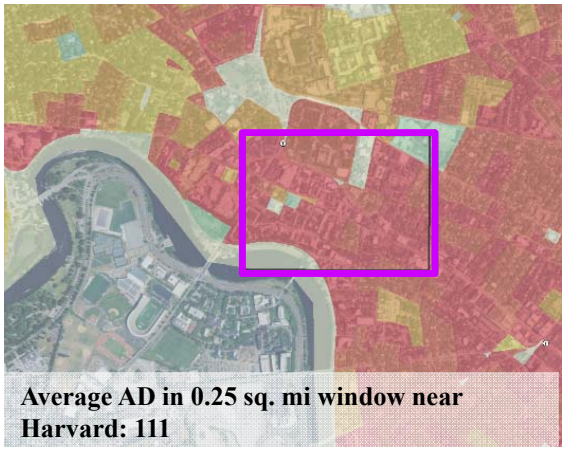
- With more to do nearby and more people to do it, dense places rely less on driving
- Activity density measures the amount of residents and jobs per acre as of 2010

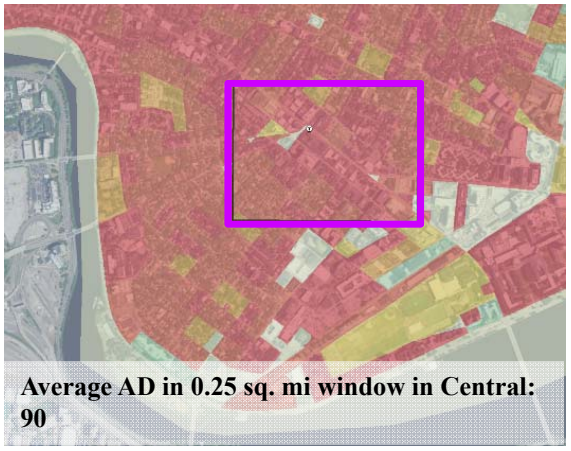
- **Today:** 34
- **Preferred Scenario:** 74
- **Best Practice:** over 75

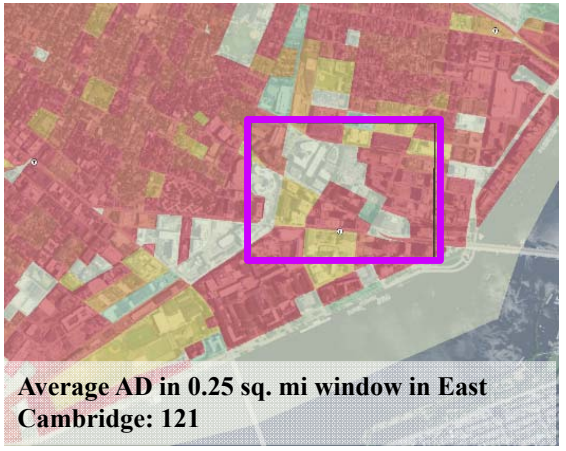





Average AD in 0.25 sq. mi window near Alewife: 24


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

McHENRY COUNTY PTAC PUBLIC TRANSPORTATION ADVISORY COMMITTEE

COMMUTESMART NEW HAMPSHIRE

➢ **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

Portland Street Car

Metric: Distance to Bicycle Facility

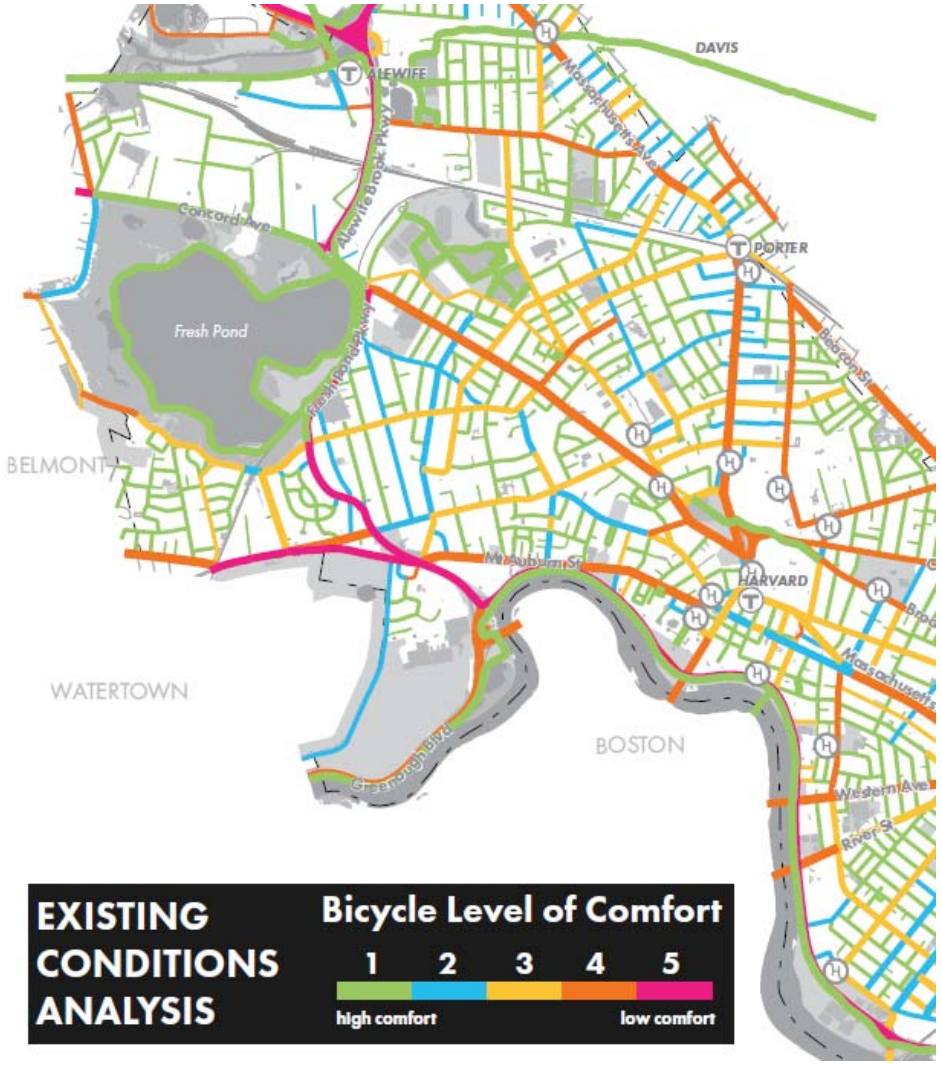
- Biking improvements have demonstrated a significant mode shift in a short time
- Today there are high comfort facilities near all sites (Concord Ave, ABP paths, Fresh Pond path, Minuteman, Belmont branch, Mystic River, Somerville Community Path, and Watertown branch underway)
- The preferred scenario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

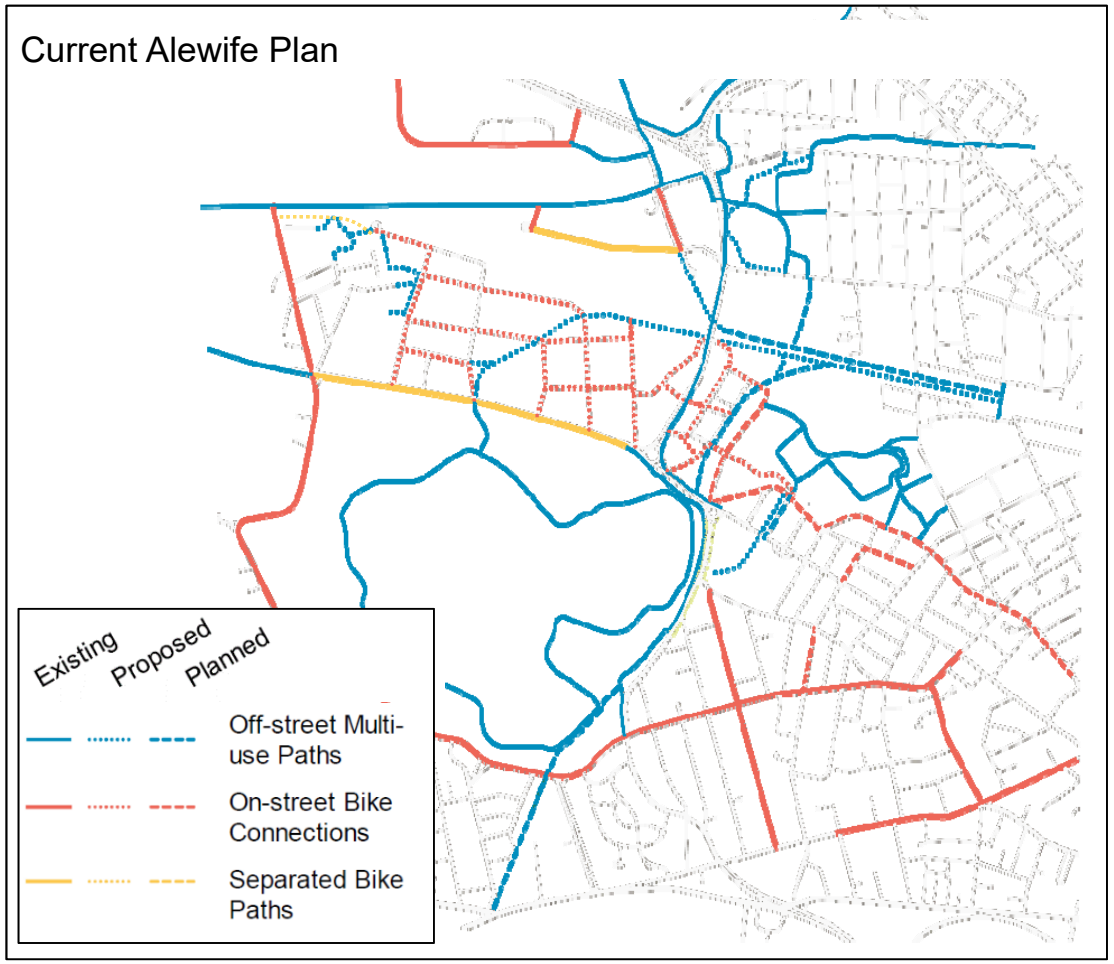
- Close gaps in Citywide bicycle network to make more places closer
- Development in Alewife will increase what people on bikes can access locally

More Difficult:

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

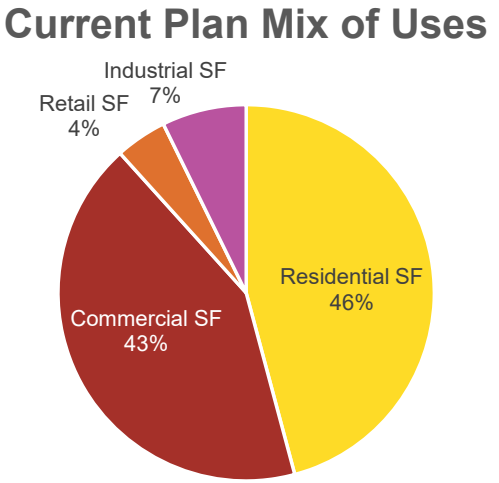
Long-Term Possibilities:

- 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



(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