CITY OF CAMBRIDGE
COMMUNITY DEVELOPMENT DEPARTMENT

IRAM FAROOQ
Assistant City Manager for
Community Development

To: City Council Ordinance Committee

From: Iram Farooq

Date: December 1, 2015

Re: **PUD-KS Zoning Petition – December 1 Hearing**

We are attaching the following materials for discussion at the upcoming Ordinance Committee hearing, in response to Policy Orders passed at the November 23 meeting of the City Council. We regret that this material could not be assembled further in advance due to the intervening holiday.

- Summary of update to the K2C2 study transportation impact analysis
- Summary of financial feasibility analysis provided by HR&A Advisors, via the Cambridge Redevelopment Authority
- Planning Board Recommendation voted on November 17, 2015, including recommended zoning text changes

These three subjects will be reviewed by staff at the hearing.

In addition, for reference, we are attaching materials previously submitted to the Council including:

- Draft Urban Design Framework for the PUD-KS District and K2 Design Guidelines
- CDD report from November 9, 2015 explaining suggested changes to the initial PUD-KS Zoning Petition.

The interactive site massing model will also be brought to the hearing.

We look forward to continued discussion of this zoning petition.

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INTEROFFICE MEMORANDUM

TO: IRAM FAROOQ
FROM: SUSANNE RASMUSSEN
SUBJECT: UPDATED K2C2 TRANSPORTATION ANALYSIS
DATE: NOVEMBER 30, 2015

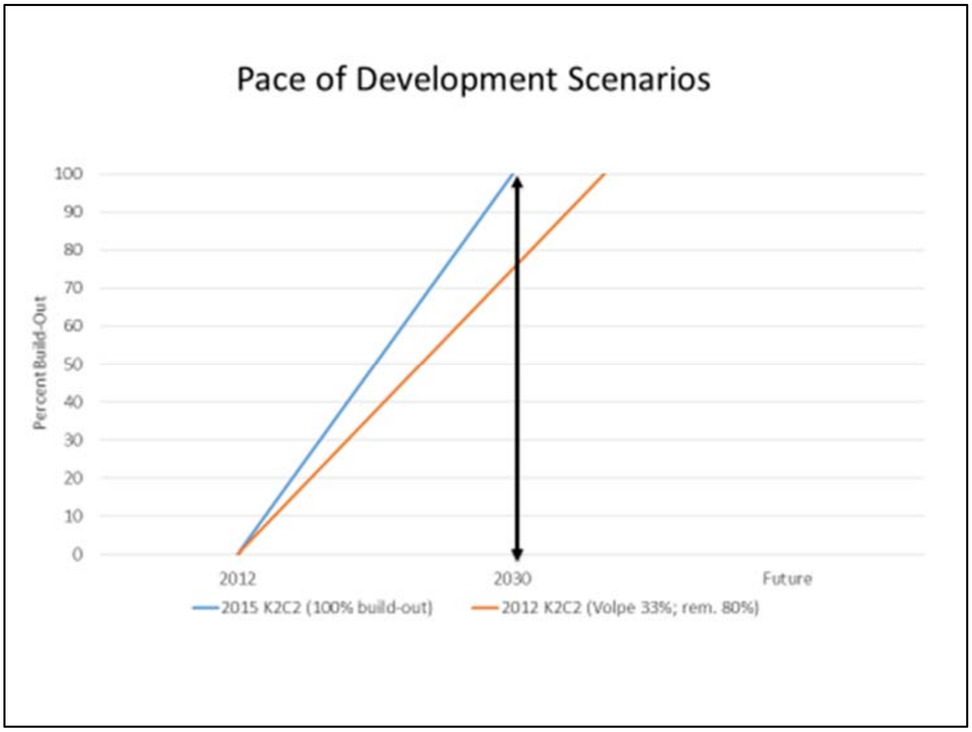
The analysis performed as part of the K2C2 Planning Study in 2012 to estimate transportation impacts from the proposed zoning for the Kendall Square and Central Square area has been updated to consider the possibility that the area might develop at a faster pace than previously assumed. While the total amount of development is virtually the same as that envisioned in 2012, the updated analysis assumes full buildout on the MIT, Volpe and CRA sites by 2030.

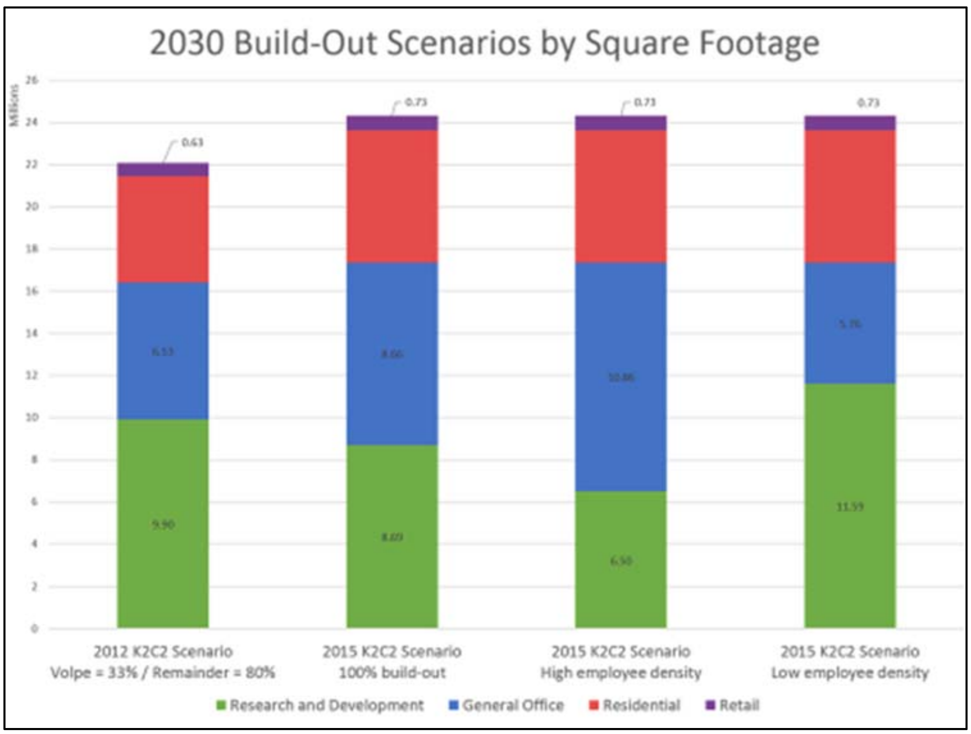
The 2012 analysis estimated how many vehicle, transit, bike and pedestrian daily trips would be expected in 2030 if zoning remained unchanged compared to the build-out scenario that was eventually adopted as part of the K2C2 plan. In addition to daily transportation impacts, an analysis called "critical sums" was also carried out to compare how the two build-out scenarios would impact traffic at a set of specific intersections.

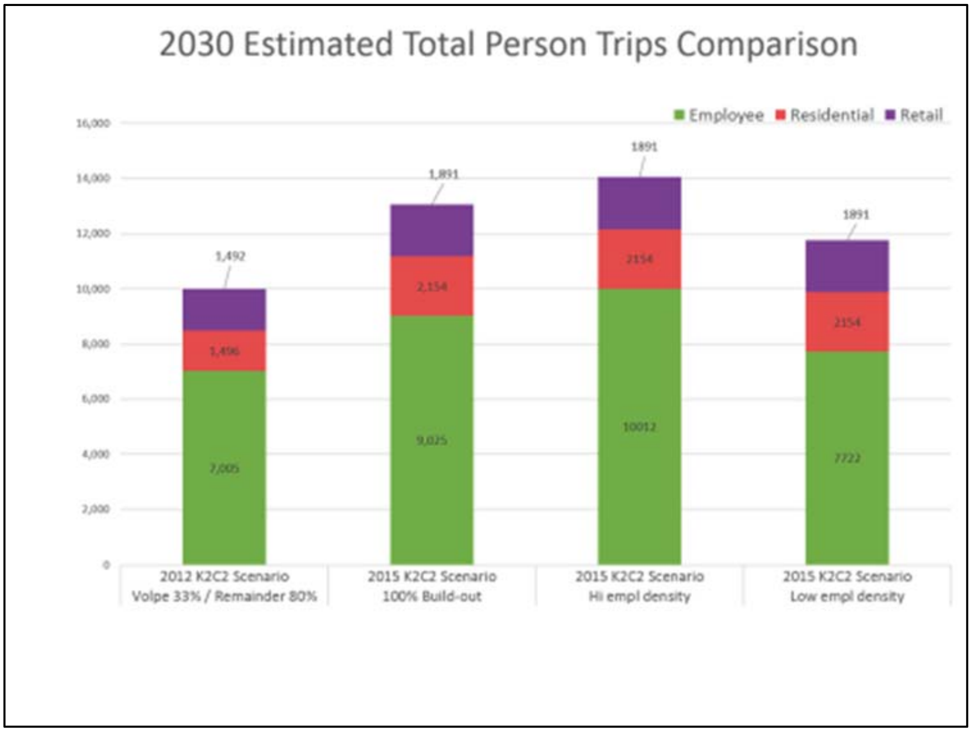
The 2030 assumptions in the 2015 update differ from the 2012 analysis in the following manner:

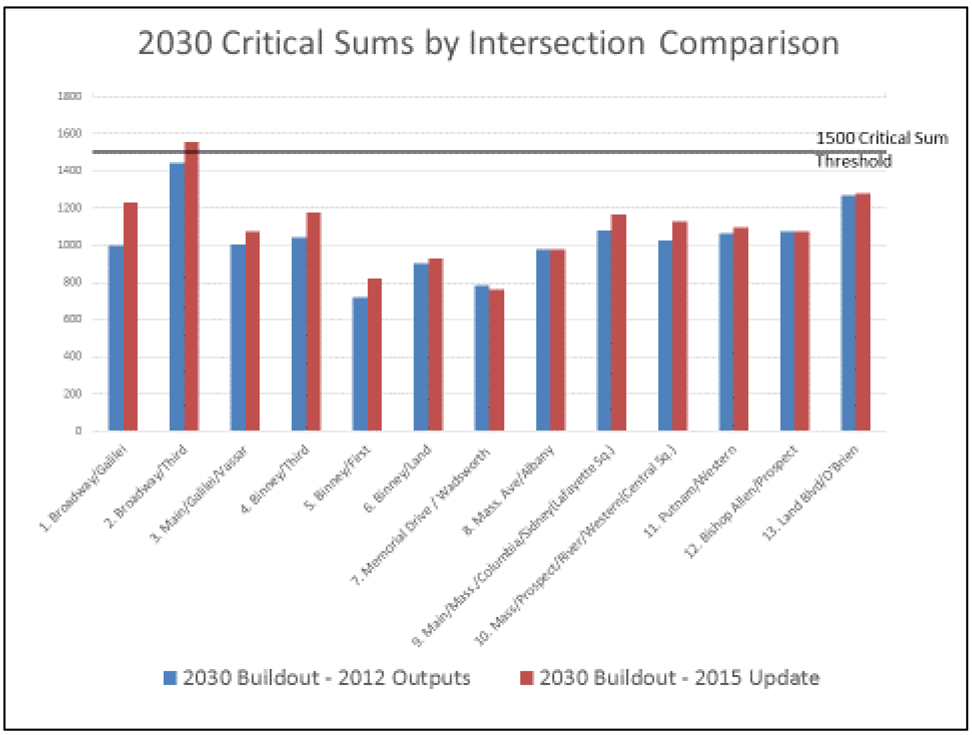
- Pace of development:
  - The 2015 analysis assumes 100% buildout throughout Kendall Square, whereas the 2012 buildout assumed that the Volpe site would only be 33% built out and the remainder of the area would be 80% built out. This leads to additional trips of all types sooner, but not to an increase in trips overall.
  - The increase in person trip generation was calculated to be between 18%-31% compared with the 2012 analysis, depending on the balance of commercial square footage between R&D and office uses.
- Impact on intersections from increase in vehicle traffic:
  - The 2012 Critical Sums analysis showed that all intersections remained below a 'critical' threshold, whereas the 2015 shows that the Critical Sum threshold is exceeded at the Broadway/Third Street intersection. Exceeding the threshold means increased wait times at an intersection, equated to having to wait more than two signal cycles before being able to proceed.

This analysis is conservative in that it assumes full buildout of the Kendall Square area in only 15 years. Actual buildout pace may alter this assumption, leading to smaller trip generation numbers than analyzed. In addition, planning tools and regulations are available at the project approval stage to address trip generation rates and/or impacts of increased trip generation including lowering of parking ratios, linking of development pace to milestones or performance standards, and direct mitigation of impacts or setting aside of funds for transportation demand management or infrastructure investment.


Pace of Development Scenarios
Percent Build-Out
100
90
80
70
60
50
40
30
20
10
0
2012
2030
Future
2015 K2C2 (100% build-out)
2012 K2C2 (Volpe 33%; rem. 80%)


2030 Build-Out Scenarios by Square Footage
Millions
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0.63
0.73
0.73
0.73
6.53
9.90
10.86
6.50
11.59
2012 K2C2 Scenario
Volpe = 33% / Remainder = 80%
2015 K2C2 Scenario
100% build-out
2015 K2C2 Scenario
High employee density
2015 K2C2 Scenario
Low employee density
Research and Development
General Office
Residential
Retail


2030 Estimated Total Person Trips Comparison
Employee
Residential
Retail
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1,492
1,496
7,005
1,891
2,154
9,025
1891
2154
10012
1891
2154
7722
2012 K2C2 Scenario
Volpe 33% / Remainder 80%
2015 K2C2 Scenario
100% Build-out
2015 K2C2 Scenario
Hi empl density
2015 K2C2 Scenario
Low empl density


2030 Critical Sums by Intersection Comparison
1800
1600
1400
1200
1000
800
600
400
200
0
1500 Critical Sum
Threshold
1. Broadway/Galilei
2. Broadway/Third
3. Main/Galilei/Vassar
4. Binney/Third
5. Binney/First
6. Binney/Land
7. Memorial Drive / Wadsworth
8. Mass. Ave/Albany
9. Main/Mass./Columbia/Sidney(Lafayette Sq.)
10. Mass/Prospect/River/Western(Central Sq.)
11. Putnam/Western
12. Bishop Allen/Prospect
13. Land Blvd/O'Brien
2030 Buildout - 2012 Outputs
2030 Buildout - 2015 Update

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MEMORANDUM

To:	Cambridge Redevelopment Authority
From:	HR&A Advisors, Inc.
Date:	December 1, 2015
Re:	Economic Analysis of Redevelopment of the Volpe Center

The Cambridge Redevelopment Authority (CRA) engaged HR&A Advisors, Inc. (HR&A) to undertake an evaluation of the economics of redeveloping the John A. Volpe Transportation Systems Center, located at 55 Broadway, based on the proposed zoning regulations. This memorandum summarizes our findings and methodology for determining the amount available to fund the following site and ancillary costs:

- Federal facility replacement (building, parking and fit-out),
- Site remediation,
- Public streets and parks, and
- Off-site infrastructure.

HR&A quantified the supportable land value (i.e. the value a private developer would pay for arms-length market transactions) for office, innovation space (office space set aside for technology startups), lab, retail, and mixed-income residential development in Kendall Square, inclusive of associated underground parking, by constructing a multi-year development feasibility model calibrated to reflect current market conditions. As such, projected construction costs are based on current projects being built in the Cambridge area and do not reflect any future design requirements, unusual ground or soil conditions, or other unique costs associated with redeveloping the John A. Volpe Transportation Systems Center.

Background and Methodology

The development feasibility model assesses the current economics of mixed-income residential rental as well as office and lab construction with ground-floor retail. In order to reflect the impact of the affordability requirements contained within the proposed zoning regulations for the Volpe site, we calibrated our residential rental cash flow to reserve 20% of total units for income-restricted affordable housing, of which 15% would be reserved for low and moderate income households and the remaining 5% would be reserved for middle income families.

Based on the "PUD-KS (Volpe Site) Rezoning Proposal" submitted to the City Council on May 27, 2015, we assumed the following development program:

- Residential: 1,116,000 gsf
- Office: 816,000 gsf
- Lab: 816,000 gsf
- Retail: 140,000 gsf

- Innovation space: 84,000 gsf
- Total: ~3 million gsf (2,972,000 gsf)

Our methodology included the following considerations:

- **Construction costs:** The financial model assumes the following hard and soft costs[1]:
  - **Residential:** $407 gsf
  - **Office:** $358 gsf
  - **Lab:** $413 gsf
  - **Retail:** $330 gsf
  - **Innovation space**: $358 gsf
  - **Underground parking:** $100,000/space
- **Supportable land value by use:** The model determines supportable land value for each use by solving for a conservative market rate of return that would be required by a standard developer in order to assume the risks associated with real estate development.[2] We calibrated our baseline development feasibility models assuming underground parking.
- **Income restricted units:** We adjusted our model to set aside 15% low-income units and 5% middle income units assuming tax-exempt bond financing, low-income housing tax credits and other subsidies would not be available, in line with current practice.
- **Rent and operating costs:** HR&A interviewed residential and commercial developers active in the Cambridge area to understand current market dynamics. Income and operating expense variables are based on data provided by the developers.
- **Development structure and phasing:** HR&A has assumed that a single horizontal developer will begin construction of site infrastructure and a replacement Volpe Center in Year 1. We have also assumed that the horizontal developer will sell developable parcels to vertical developers over three phases, the first of which will begin in Year 2.
- **Horizontal financing assumptions:** Our model assumes the horizontal developer will receive a construction loan with a 6% fixed interest rate, sized using a 60% loan-to-cost ratio, which is consistent with conservative underwriting of projects in the Cambridge area.
- **Development and linkage fees:** Based on proposed zoning documents and guidance from City and CRA staff, HR&A has assumed that the following fees will be incurred as each phase is developed:
  - Incentive Zoning Payments (Affordable Housing), and
  - Kendall Square Funds ($10 per gsf), including:
    - Open Space Payments,
    - Transit Improvement Payments, and
    - Workforce Readiness Payments.

[1] Soft costs are net of financing costs. As noted above, construction costs do not reflect any unique costs associated with redeveloping the site. Additional Kendall Square Fund fees ($10 per gsf) are accounted for by phase of vertical development, as described further below.
[2] HR&A calibrated its model using a leveraged internal rate of return of 15%, which corresponds to a 5-7% unleveraged cash-on-cash return assuming that 60% of project costs can be financed with a conventional loan paying interest of 6% per year, a conservative interest rate reflective of long-term market trends.

Findings

The following table details supportable land value per square foot for potential uses, net of associated underground parking costs, and then deducts fees and carrying costs. As the affordable housing share required by current zoning is higher than under regulations impacting other sites in Kendall Square, projected residential land values are moderately lower than values reflected in recent transactions.

Only a portion of revenues from site disposition are available to support Volpe replacement and other site costs due to the following considerations:

- **Development and linkage fees:** Our model assumes that $41.3 million in development fees will need to be paid to the City, some of which will inflate over time. These costs are assumed to be incurred over time as development proceeds.

- **Phasing and cost of capital:** The incurring of Volpe replacement and other site costs prior to the realization of revenues from phased disposition of development-ready portions of the site to vertical developers reduces available revenues, as costs incurred must be funded with a mixture of equity and debt until loans and equity can be repaid with land sale proceeds.

Estimated Land Value	Per GSF	Total[3]
Residential[4]	$58	$65,000,000
Office	$155	$126,000,000
Lab	$199	$162,000,000
Retail	$68	$10,000,000
Innovation	$129	$11,000,000
Subtotal-Residual Land Value[5]	**$126**	**$374,000,000**
Financing and Other Costs[6]	-$30	-$91,000,000
Subtotal-Financing and Other Costs	**-$30**	**-$91,000,000**
Supportable Site and Volpe Replacement Costs	**$95**	**$283,000,000**

[3] Rounded to the nearest million.
[4] The residual land value of the market-rate and affordable components is $120 and -$192, respectively.
[5] Based on proposed program SF.
[6] Includes incentive/linkage fees, debt and equity costs.