



I-90 Allston Multimodal Project, Boston, MA

Notice of Project Change

To: David Mohler, MassDOT

From: Tim Reardon, MAPC

RE: Allston I-90 Interchange FEIR No-Build Projections

Date: 3/21/2019

At the request of MassDOT, MAPC has conducted a detailed review of recent development and plans in order to provide updated land use assumptions to be used for the I-90 Interchange FEIR. This memo describes the assumptions used to create the No-Build land use inputs for 2030 and 2040 and presents the results of that analysis. Upon approval by MassDOT, MAPC will make adjustments to the October 2018 LRTP land use as necessary to incorporate these changes (which may result in changes to the regional total) and will provide those results to CTPS for input to the regional travel demand model.

Process and Data Sources

In preparing these updated projections, MAPC referenced memos produced by Harvard and CTPS for the DEIR, as well as more recent planning documents, particularly the [PDA Master Plan](#) and the [Enterprise Research Campus Framework Plan](#) approved by the PBDA last year. MAPC also referenced the 2013 [Institutional Master Plan](#) for the Allston campus and permitting documents and other sources for information about other projects in the area.

Developments completed or under construction were included “as built” based on actual project information. Details about planned developments were based on available documentation, though MAPC was required to make certain assumptions about development mix, timing, parking, and other factors. For the Enterprise Research Campus, MAPC estimated the total development acreage in each portion of the site, subtracted the area dedicated to open space, applied Floor Area Ratio assumptions to estimate the built square footage, allocated this area to different use categories, and then estimated employment. For other sites, the development square footage from planning documents was utilized and applied to the employment densities. Nonresidential use categories and assumed employment density are consistent with categories and assumptions used to develop the DEIR inputs. The 2016 employment and household estimates were produced by adding the completed developments to the 2010 land use, and may not match the 2016 base year used by CTPS.

A note about the DEIR inputs: In a memo reference by CTPS for preparation of DEIR projections, Harvard Planning staff enumerated all the projects in the 10-year IMP and other approved projects, and assigned a 2025 completion estimate for all these developments. Roughly the same volume of development was then estimated for 2025 – 2035, though no specific proposals exist for this period nor any other high-profile redevelopment candidates in TAZs 238 or 244. MAPC has updated the estimates for the pre-2030 period using more updated planning documents, but has not assumed that development continues at the same rate during the following decade. The Harvard memo also references a reallocation of development from TAZ 238 to 244, but does not explain if this reallocation refers to the uses relocated to 28 Travis Street or some other location. Except as noted below, there is no reallocation of employment across zones.

The following sections describe recent and anticipated developments in each TAZ, with the completion year (or range of completion years) shown in parentheses.

TAZ 238

This zone is largely Harvard athletic fields and facilities. Recent and anticipated development in this zone consists of:

- *Continuum*, 325 housing units & 45,000 square feet of retail space. This project entailed the removal of 55,600 square feet of light industrial space, with those uses (and associated employment) relocated to 28 Travis Street in TAZ 245. (2015)
- *Mixed Use Facility and Basketball Venue*: 333,000 square foot athletic facility and 400 group quarters (2020-2030)

TAZ 244

This is the main HBS campus. Recent (since 2010) and anticipated development in this zone consists of:

- *Charlesview Apartments*: relocation of 213 households in deed restricted units to a new development elsewhere in Allston (2013)
- *Tata Hall*: New residential dormitory and academic/institutional space. 180 group quarters (executive education program housing) and 100,000 SF institutional. (2013)
- *Ruth Mulan Chu Chao Center*: 75,000 square feet of academic and office space (2016)
- *Batten Hall / i-Lab*: Conversion of former WBGH building to innovation space. 30,000 SF. (2011)
- *Harvard Gateway Project*: 300,000 SF office and mixed use development at Barry's Corner. (2020 – 2030)
- *HBS Klarman Hall/ G2 Pavilion*: new lecture hall and academic space (2020)
- *HBS Faculty & Admin office building*: 110,000 square feet of office space for HBS (2020 – 2030)

TAZ 245

This zone includes the Enterprise Research Campus as well as adjacent light industrial spaces and the Genzyme facility. Recent and anticipated development here consists of:

- *28 Travis Street*: On this site Harvard renovated/constructed a, 80,000 square foot facility for fleet management, Harvard Police, mail, office space, and related uses. Approximately 55,600 square feet of uses were relocated from a preexisting facility at 219 Western Avenue which was redeveloped into the Continuum. (2015)
- *Science and Engineering Complex*: This is a 500,000 square foot building with academic and research uses currently under construction on Western Avenue. (2020)
- *Master Plan for PDA Site 115*: While this Master Plan document encompasses an area of 14 acres, approximately half the site is designated for temporary surface parking (900 spaces). The remaining 7 acres are slated for a mix of office (22%), R&D (22%), residential (28%), and hotel (28%), totaling 900,000 square feet, for a gross FAR of approximately 3.0 (excluding the parking areas from the denominator.) (2020 – 2030)
- *Enterprise Research Campus Framework Plan*: This plan spans a 36-acre site inclusive of the Master Plan site. Harvard Planning envisions this area as a 24/7 live-work-play neighborhood. MAPC estimated development for the 29 acres that do not overlap with the PDA. Dimensional aspects and use mix of the site are not specified except for an open space set-aside of 20%. The assumed use mix pivots off the PDA master plan, though with a higher share of floor area dedicated to housing (37%), a smaller portion dedicated to office and research and development (24% total), only 5% for hotel uses, and a 10% retail component. MAPC assumed an overall blended parking ratio of 0.66 spaces per 1,000 square feet (lower than the ratio outlined in the PDA Master Plan but consistent with City of Boston policy intentions) and assumed that half of the spaces would be in

garages above ground level, where it would count against the development's FAR. MAPC assumed an FAR of 2.0 on the non-open space portions of the 29 acres, which may be a conservative estimate given a 2018 zoning change that raised the allowable FAR in the underlying district from 2.0 to 4.0. Using this assumption, MAPC arrived at estimated capacity of 1.62 million square feet completed between 2025 and 2040, in addition to 800,000 square feet of parking (2,000 spaces) split between elevated garages and subsurface garages. (2025 – 2040)

TAZ 246

TAZ 246 includes the existing interchange. Under a no-build scenario, there is no new developable land and so no additional employment is anticipated. The existing employment at the Doubletree Hotel and the Houghton Chemical Corporation is projected to continue.

No-Build Projections

Table 1 shows the projected No-Build total employment for the four TAZs in the study area, along with the 2040 total used in the DEIR. (Employment by sector is included in the appendix.) The total is essentially the same as the DEIR, though the distribution is different. There is relatively less growth in TAZ 244 because MAPC did not assume growth would continue at the same pace after completion of projects already in the pipeline (as had been done in the Harvard memo.) Conversely, there is more relatively more growth anticipated for TAZ 245 due to the use of updated density assumptions based on the PDA and Framework Plan.

Table 1: Projected No-Build Employment, I-90 TAZs

	Emp_2010	Emp_2016	Emp_2030	Emp_2040	DEIR No-Build Emp 2040
238	624	798	798	798	626
244	1083	416	2,928	2,928	3,447
245	474	634	4,201	5,567	5,135
246	583	583	583	583	583
Total	2,764	3,319	8,397	9,876	9,791

Table 2 shows projected No-Build total households for the four TAZs in the study area, along with the 2040 total used in the DEIR. The results are largely the same as the DEIR, with the exception of TAZ 245, which assumes that the ERC buildout will have a residential component comparable to that described in the PDA Master Plan.

Table 2: Projected No-Build households, I-90 TAZs

	HH_2010	HH_2016	HH_2030	HH_2040	DEIR No-Build HH 2040
238	0	325	325	325	325
244	867	654	654	654	654
245	54	54	553	1,052	379
246	0	0	0	0	0
Total	921	1,033	1,533	2,031	1,358

MAPC did not uncover or receive any updates to the Group Quarters projections used for the DEIR, which already account for the Basketball/Wrapper building and all the previously completed dorm development. In addition to the 180 Tata Hall group quarters already completed, MAPC assumed an additional 180 dorm beds to be completed in the 2030 – 2040 timeline, consistent with the 2014 Harvard memo.

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Appendix

Table A1: Site Specific Assumptions, No-Build Scenario

Zone	Site/ Development area	Total Square Footage (net)	Residential (Square feet)	Non- Residential (Square Feet)	Parking (Square Feet)	Housing Units	Employ- ment	Parking Spaces	Group Quarters	Completion Year
238	Mixed Use Facility & Basketball Venue	330,000	-	330,000		-	105	-	400	2015
238	Continuum	289,000	300,000	(11,000)		325		-		2015
238	TOTAL	619,000	300,000	319,000		325	105		400	
244	Charlesview Apartments	(213,000)	(213,000)	-		(213)	-	-		2012
244	HBS Faculty & Admin office building	110,000		110,000		-	314	-		2022
244	Tata Hall	100,000		100,000		-	250	-	180	2013
244	Batten Hall / i-Lab	72,200	-	72,200		-	181	-		2022
244	Harvard Gateway Project	300,000	-	300,000		-	768	-		2022
244	HBS Klarman Hall/ G2 Pavilion	100,000		100,000		-	250	-		2018
244	TOTAL	544,200	(213,000)	757,200		(213)	1,845		180	
245	Science and Engineering Complex	500,000		500,000		-	1,429	-		2020
245	28 Travis Street	80,150		80,150		-	160	-		2015
245	ERC - Site 115	899,514	249,865	649,649		250	1,455			2025
245	Remainder of ERC - Framework Plan	2,021,184	747,838	869,109	404,237	748	2,050	2,011		2040
245	TOTAL	3,500,850	997,700	2,098,900	404,200	998	5,100	2,011	0	
All	GRAND TOTAL	4,664,050	1,084,700	3,175,100	404,200	766	7,044	2,011	580	

Table A2: Base year (2010 and 2016) estimates of employment by sector

TAZ	Ret_2010	Bas_2010	Svc_2010	Tot_2010	Ret_2016	Bas_2016	Svc_2016	Tot_2016
238	0	0	624	624	114	0	684	798
244	1	10	1072	1083	1	10	1,405	1,416
245	0	424	50	474	-	584	50	634
246	154	115	314	583	154	115	314	583
Total	155	549	2,060	2,764	269	709	2,370	3,431

Table A3: Forecast year projections of employment by sector, No-Build Scenario

TAZ	Ret_2030	Bas_2030	Svc_2030	Tot_2030	Ret_2040	Bas_2040	Svc_2040	Tot_2040
238	114	-	684	798	114	-	684	798
244	62	10	2,857	2,928	62	10	2,857	2,928
245	102	584	3,514	4,201	306	584	4,676	5,567
246	154	115	314	583	154	115	314	583
Total	431	709	7,369	8,509	635	709	8,531	9,876

Table A4: Households and Group Quarters by forecast year, No-Build Scenario

	HH_2010	HH_2016	HH_2030	HH_2040	GQ_2010	GQ_2016	GQ_2030	GQ_2040
238	0	325	325	325	0	0	400	400
244	867	654	654	654	1,503	1,683	1,683	1,863
245	54	54	553	1,052	0	0	0	0
246	0	-	-	-	0	0	0	0
Total	921	1,033	1,533	2,031	1,503	1,683	2,083	2,263

To: David Mohler, MassDOT

From: Tim Reardon, MAPC

RE: Allston I-90 Interchange FEIR Build Scenario Projections

Date: 7/12/2019

At the request of MassDOT, MAPC has conducted a detailed review of recent development and plans in order to provide updated land use assumptions to be used for the I-90 Interchange Final Environmental Impact Report (FEIR.) This memo describes the assumptions used to create the Build Scenario land use inputs for 2030 and 2040 and presents the results of that analysis. Upon approval by MassDOT, MAPC will make adjustments to the land use forecasts produced in October 2018 for the Long Range Transportation Plan (LRTP) as necessary to incorporate these changes (which may result in changes to the regional total) and will provide those results to CTPS for input to the regional travel demand model.

Background

The study area for this analysis comprises four Transportation Analysis Zones (TAZs) shown on a map in the appendix and summarized below:

- 238: Harvard Athletic Complex, Continuum
- 244: Harvard Business School, iLab
- 245: Enterprise Research Campus / Allston Landing North
- 246: Existing Interchange, Beacon Park Yards / Allston Landing South¹

MAPC has previously provided “no-build” land use projections (likely growth if the interchange is not reconstructed), described in a memo dated 3/21/2019. Those projections anticipate development of approximately 1,100 new housing units and enough commercial space to support an additional 6,600 jobs in the three study area TAZs north and west of Cambridge Street. In the no-build scenario, no new growth is projected within the TAZ containing the existing interchange (TAZ 246.)

MassDOT has asked MAPC to provide a recommended land use projections for the “build” scenario, in which removal of the interchange allows for development in TAZ 246. Based on the best information available at the time of analysis, MAPC estimates that the reconstruction of the interchange will create approximately 39 acres of land (excluding road rights-of-way) that will be available for development or public use. This newly developable land area is referred to as the ‘terra firma’ portion of the site. The rights of way for the highway, rail corridor, station, etc. will cover an additional 30+ acres, spanning an area from the narrow throat section to a wider section where West Station is proposed. Some of this could area could be used for ‘air rights’ development built on decking over the transportation infrastructure. However, air rights development is substantially more expensive than conventional development on a per-square foot basis, and the costs are more uncertain given the need to work around exiting infrastructure.

¹ Different stakeholders refer to various parts of the study area using different names based on historical designations or future development. Since this memo is forward-looking, we have adopted Harvard University’s terminology of Allston Landing North and Allston Landing South to describe the major development areas in TAZs 245 and 246.

The 2017 Draft Environmental Impact Report for the interchange used build condition land use projections created by:

...assuming the same land use density as portions of the study area having similar characteristics, which were determined, with input from Harvard, to be TAZs 244 and 245. Since the developable land area in TAZ 246 is 70 percent of the sum of the developable land areas in TAZs 244 and 245, it is projected to have 70 percent of the employment and population of TAZs 244 and 245 (combined) in the 2040 Build condition. (CTPS memo 3/24/2017)

It should be noted that the “developable area” considered for the above calculation was limited to the 39 acres of ‘terra firma’ development on land owned (now or in the future) by Harvard. No air rights development was assumed in the DEIR.

In consultation with MassDOT, it was also determined that the FEIR Build scenario land use does not need to conform to regional control totals for population, households, or employment that have been adopted in regional planning documents. Additional employment or households associated with the build scenario do not need to be compensated for by reducing growth elsewhere. In fact, these projections seek to maintain the jobs-workers balance by adding new households throughout the region outside the study area so there are enough workers to eliminate the need for any additional in-commuting to the region.

Uncertainties and Assumptions

Innumerable factors will affect development potential and future land use in Allston Landing South, some of which are listed below:

- City of Boston planning and zoning policies for the area, including parking policies
- Harvard University’s development interests and strategies
- Configuration and timing of the interchange, commuter rail station, access roads, and potential MBTA layover facility
- The timing, quality, and connectivity of transit service to/from/through West Station
- Complexity and cost of decking necessary for air rights development
- Real estate market conditions, both commercial and residential

Given so many different factors and institutions, and the uncertainty around each, it is difficult to credibly develop a “most likely” land use future for Allston Landing South. Some influential elements of the project design, such as the station location, have not yet been determined yet, and could even be affected by this memo if model results indicate changes are necessary.

In the context of this uncertainty, MAPC chose to specify a land use scenario demonstrating principles of transit oriented development and sustainable transportation. There is abundant evidence about the factors that shape the transportation patterns of new districts and neighborhoods. District and neighborhood characteristics associated with less vehicle ownership and usage, higher transit ridership, and greater economic activity include the following:

- Higher densities that concentrate destinations within walking distance of major transit stations;
- A mix of uses that enable residents and visitors to accomplish many trips in the immediate area;
- High quality of transit service that provides easy access to employment and other destinations;
- A street grid and active transportation network that allow for direct and safe nonmotorized travel;
- Abundant affordable housing and rental units that enable “core transit users” to live in the area;
- Parking supply and pricing policies that disincentivize auto commuting and frequent auto use.

MAPC has considered these factors in the creation of the build scenario so that the resulting model results and permitting documents are consistent with state and regional policies about development. The desired outcome is a scenario consistent with both MAPC's regional plan *MetroFuture*, and also the practical and financial realities of complex urban development.

Practically speaking, there are a discrete set of development assumptions that factor into the calculations about future development and transportation demand at Allston Landing South, as follows

- Timing of station opening
- Density assumptions for terra firma parcels in Allston Landing South
- Air rights development – area, density, timing assumptions
- Allston Landing North/Enterprise Research Campus – density
- Timing of development– initiation and buildout
- Parking availability/vehicle ownership for resident households
- Cost of parking for workers commuting to site

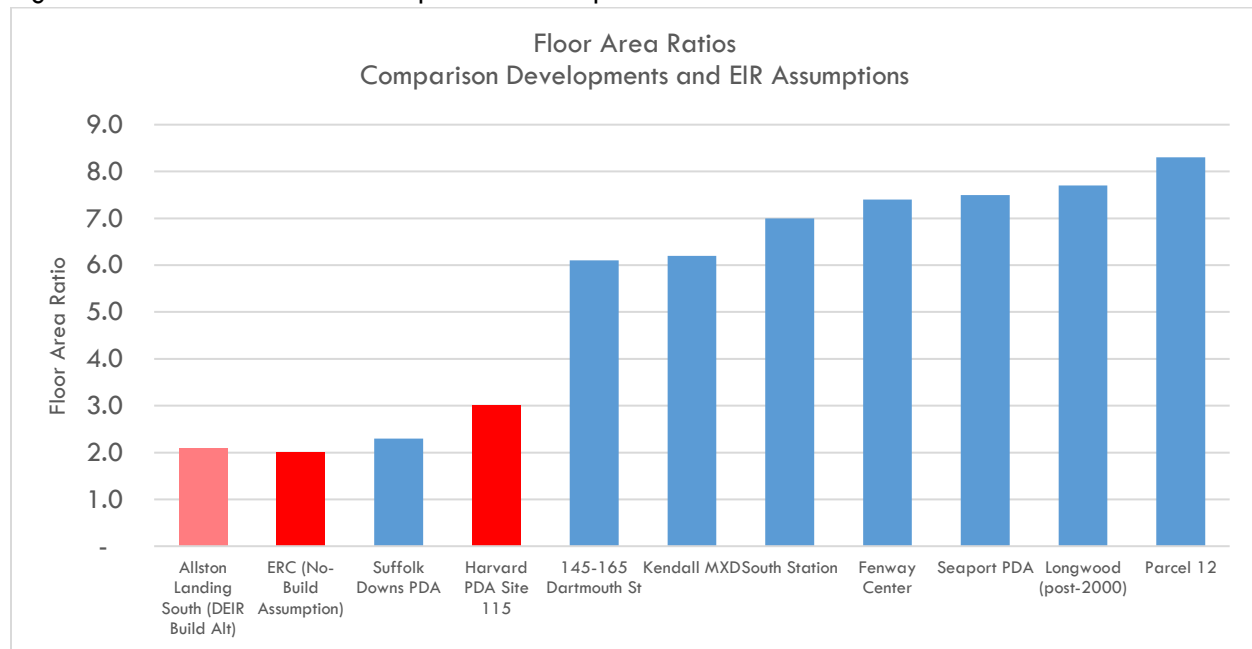
(The last two on this list, regarding parking, do not affect the number of residents and workers directly, but do influence travel model assumptions about mode choice, and will be part of MAPC's model inputs.)

This scenario assumes that West Station is constructed concurrent with completion of the interchange, and both facilities open in 2032, the current best estimate for interchange completion. The scenario also assumes that robust transit service (both frequent east-west rail and robust connecting/through service to points north and south) is available to serve new residents and workers; that there is no temporary layover facility; that the station location and access roads are configured to facilitate air rights development; and that regulatory agencies implement sustainable transportation policies regarding parking and land use. If the transportation network and transit service levels selected by MassDOT for the FEIR differ substantially from these assumptions (e.g., if interchange construction and/or station opening is delayed well past 2032, if commuter rail service levels are not improved, or if connecting services are not provided) then it would not be appropriate to use the land use scenario presented in this memo.

Comparable Development Densities

To provide a benchmark for realistic and possible development densities, MAPC analyzed major development areas around the Inner Core, both terra firma and air rights, to assess the range of floor area ratio (FAR), a measure of density. Based on the best available information, we estimate FARs of 6.0 to 8.0 for recent developments and master plans in Kendall Square, the Seaport, Longwood, and Back Bay. (For comparison, the DEIR estimated an FAR of 2.0 for the terra firma development.) An appendix to this memo details the calculations and data sources for these estimates.

Figure 1: Floor Area Ratios of Comparison Developments



Based on this information, MAPC assumed an FAR of 5.0 for the terra firma development, and FAR of 7.0 for air rights development, values that were within the range or slightly lower than observed densities of comparable developments.

The land area basis for terra firma development is approximately 39 acres, excluding any road rights of way. Consistent with the ERC Framework Plan, the build scenario assumes 20% of the land area will be used for public open space, not including any internal roadways or other unbuildable areas; floor area ratios are applied to the remaining land to estimate total floor area (both habitable floor area plus parking.) MAPC also assumes that the full footprint of the transportation infrastructure will not be appropriate for air rights development, which are likely to cover only a portion of the highway within the timeline of these projections. We estimate that the total footprint of the proposed highway and rail line is approximately 34 acres, of which we assume 50% (17 acres) could be available for air rights development.

In addition to new assumptions about major growth at Allston Landing South, the build scenario also assumes slight increases in the densities of adjacent areas. Specifically, the overall FAR for the Enterprise Research Campus /Allston Landing North is increased from 2.0 to 3.0 for the build scenario, an assumption still less than the approved maximum FAR of 4.0 specified in the ERC Framework plan.

For the timing of anticipated development, we assumed that terra firma development would commence in 2032 shortly after completion of the interchange reconstruction and West Station construction. Given the substantial cost, complexity, and uncertainty regarding air rights construction, it is likely that the early phases of development at Allston Landing South will focus on relatively simpler terra firma development for at least 8 to ten years. As a result, the air rights development is not expected to commence until 2040. Of course, positive conditions with regard to the station opening, air rights decking, and demolition of the old interchange could enable construction to begin much earlier. Both terra firma and air rights development areas are assumed to have a 20 year buildout timeline, with full completion scheduled for 2052 and 2060, respectively.

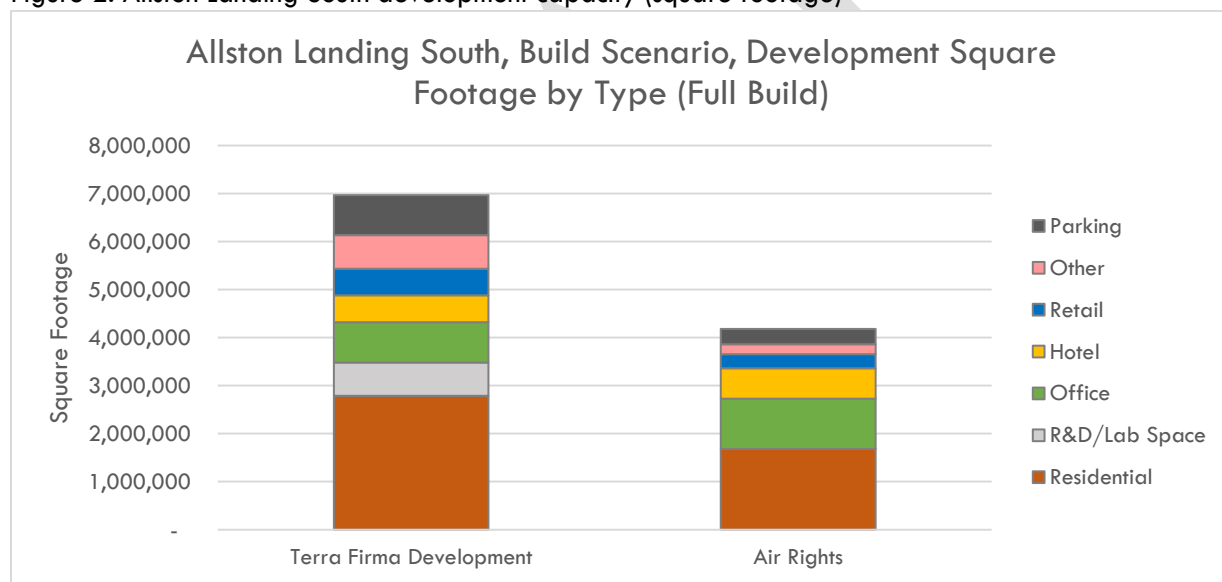
The mix of uses will be strongly influenced by real estate market conditions, though zoning regulations and housing policies will also have a major role. As described above, the developable land area was

determined by subtracting a 20% open space set aside from the land area (excluding rights of way) and then multiplied by the floor area ratio to determine total floor area. Of this, MAPC assumed that approximately 12% of the terra firma built area would be used for parking/vehicle storage, based on assumptions described below. Of the remaining built square footage, approximately 45% is used for residential uses, 25% for office or R&D space; and 30% for retail, hotel, or other institutional and cultural uses.² The specific distribution of nonresidential uses was based in part off the ERC Framework plan as well as the use mix in the comparison districts. Since the regional travel demand model does not use income as an explicit variable in trip production, distribution, mode choice, or assignment, specific assumptions about the percent of rental and/or affordable units is not necessary and was not prepared at this time.

Build Scenario – Projected Growth

The chart below shows the projected distribution of square footage in Allston Landing South under the specified assumptions. The result is an estimated 6.1 million square feet of finished floor area on the terra firma parcels (plus 840,000 square feet of parking), and about 3.9 million square feet of floor space on the air rights (plus 315,000 square feet of parking.) Based on the use mix, this development would include about 4,500 housing units, nonresidential space sufficient to accommodate approximately 12,400 employee, and 2,900 parking spaces to be used by residents, workers, and visitors.

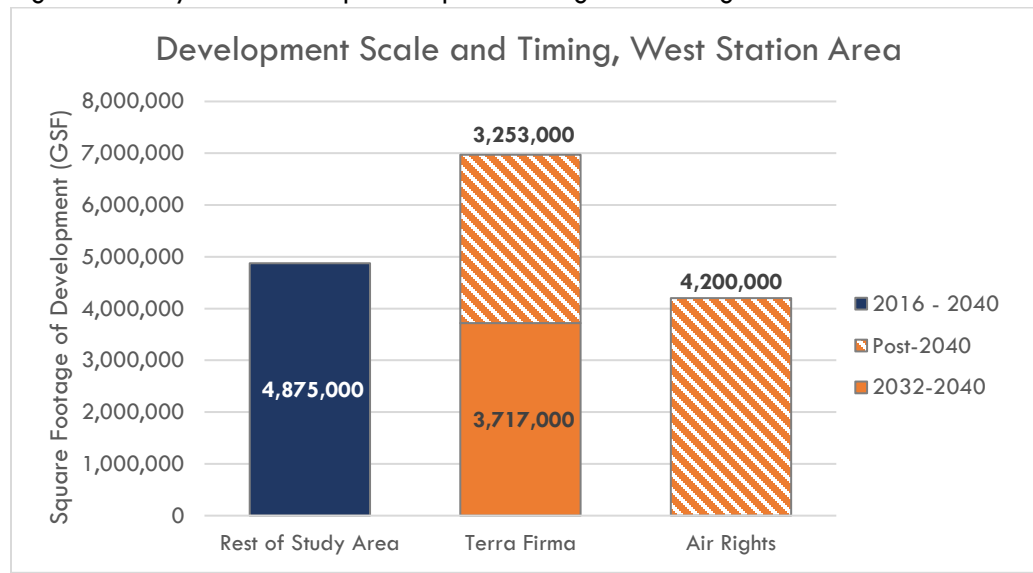
Figure 2: Allston Landing South development capacity (square footage)



Of course, this development would not materialize overnight. In fact, only 33% of the potential development is projected to be complete by the FEIR forecast horizon of 2040. Given the buildout timeline assumptions, approximately 3.8 million square feet of floor area and parking is forecast for completion by 2040. Combined with the other TAZs, these projections total 8.6 million square feet of development by 2040. An additional 7.4 million square feet is expected to be developed in Allston Landing South after 2040.

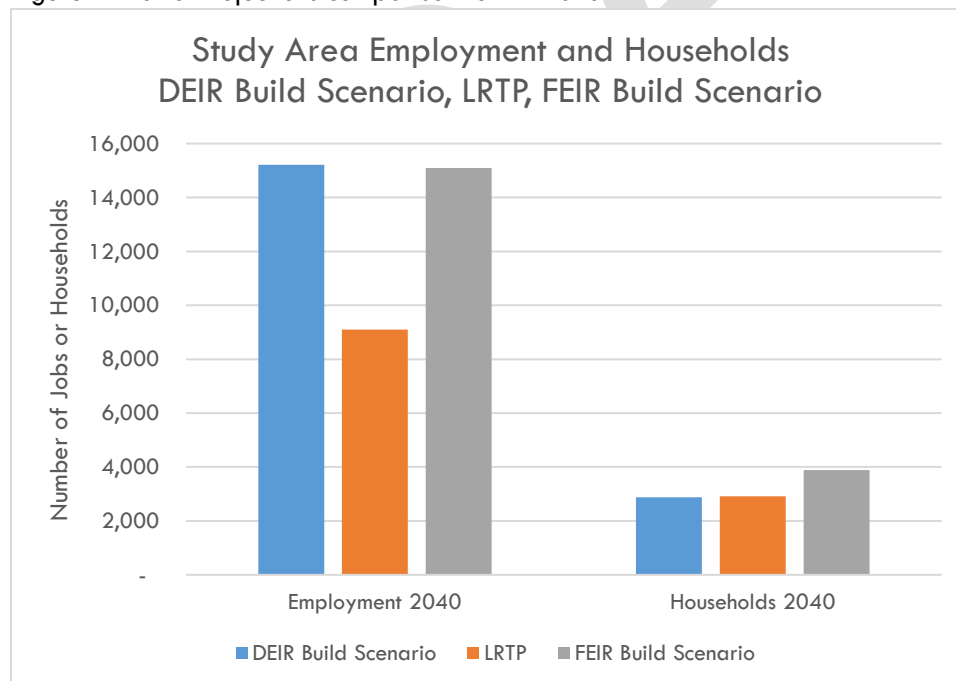
² Employee densities for the different uses are as follows: R&D and Office, 350 square feet per employee (sf/emp); cultural and other uses, 400 sf/emp; retail, 600 sf/emp; hotel, 800 sf/emp.

Figure 3: Study Area development square footage and timing



Under this assumed mix and timing of development, Allston Landing South would experience an increase of 4,100 jobs over the period 2032 – 2040, and growth of 1,500 households. In combination with the substantial development in the Enterprise Research Campus and (to a lesser extent) the Harvard Business School, the total employment growth for the study area is approximately 12,300 jobs and 3,000 households. As shown in the chart below, the total employment is comparable to the DEIR Build Scenario, whereas the total number of households is approximately 1,000 households higher than the DEIR.

Figure 4: 2040 Projections comparison to LRTP and DEIR



Both the DEIR and FEIR employment projections are much higher than the LRTP projections delivered in October 2018. This is because the total employment for the LRTP is constrained by a regional control total, and the study area is competing with other major development sites around the region, such as the

Seaport, Inner Belt, Kendall Square, etc. In total, the development employment capacity of these development sites exceeds the projected demand for nonresidential space, and the land use modeling approached used by MAPC for the LRTP spread the job growth across multiple development sites rather than selecting a few development areas (such as the study area) to be built to their full capacity. As described below, the higher levels of employment growth (relative to the LRTP) projected here are accommodated by changes in the regional control totals rather than reduction of growth in other places.

Parking and Vehicle Ownership

To be consistent with the transit-oriented nature of the scenario and likely trends related to vehicle ownership, MAPC recommends assuming an average of 0.3 vehicles per household for future residential development on terra firma parcels, and just 0.2 vehicles per household on air rights. There are more than a dozen major transit stations with current vehicle ownership close to this proposed figure, including Downtown Crossing, Massachusetts Avenue (Orange Line), Ruggles, Longwood Medical Area/Brigham Circle, and St. Mary's. Babcock Street, the transit station most proximate to Allston Landing South, has average vehicle ownership of 0.4 vehicles per household currently. Both Kendall Square and Harvard Square station areas have average vehicle ownership of less than 0.55, indicating that the proposed ratio is feasible given additional parking limitations, transit services, and transportation demand management policies.

With an estimated 4,500 housing units in Allston Landing South, this parking ratio requires 1,200 spaces for residential use, leaving the remaining 1,700 spaces for commuters and visitors to the site. This number of spaces implies a parking ratio of approximately 0.4 vehicles per 1,000 square feet of finished nonresidential area, a ratio lower than current city of Boston policy but achievable with an aggressive combination of transit service and TDM. If one third of the residential spaces were shared parking also available to commuters, there would be approximately 17 spaces for every 100 employees, implying a drive alone mode share of no more than 17%.

Given the intense demand for those spaces and the need to discourage auto commuting, MAPC recommends assuming commuter parking costs similar to those currently observed Downtown and in Kendall Square. Research conducted for the recently completed Lower Mystic Regional Working Group identified a feasible parking cost of \$22 per day for commuters, which had a notable effect on mode choice to and from that study area. MAPC recommends that CTPS use the same assumption for commuters to the four study area TAZs.

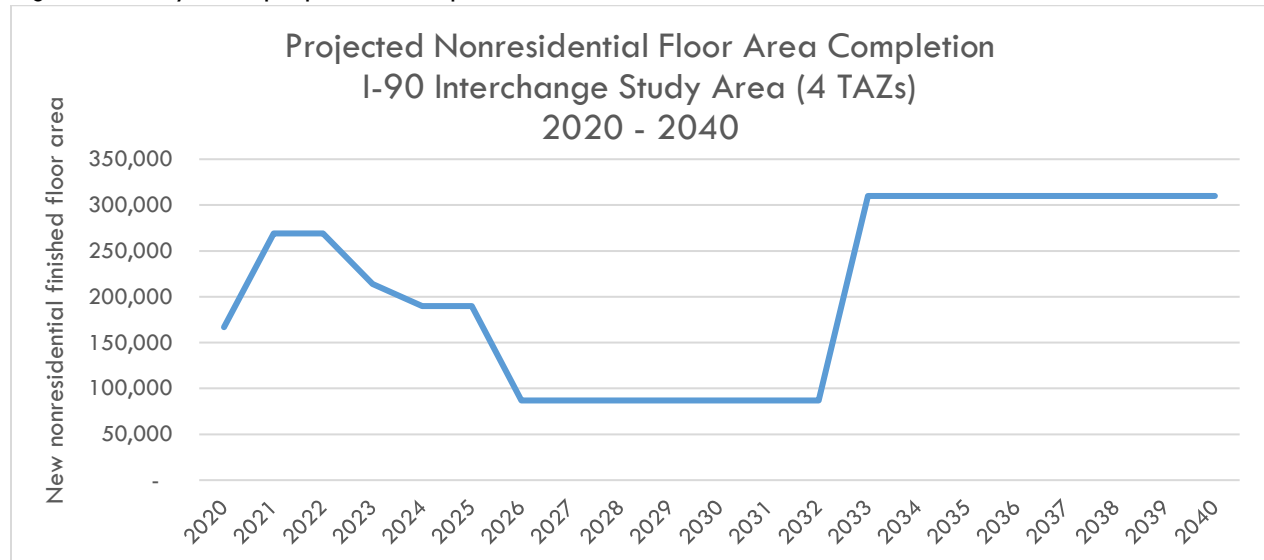
Projected and Historical Absorption Rates

In order to contextualize the projected growth in the study area, MAPC compared the amount of annual construction anticipated in the projections to historical commercial development in the area. Data from CoStar (a commercial real estate analytics provider) provided estimates of net absorption of commercial space for a submarket area spanning much of the Inner Core as well as the MetroWest portion of Route 128.³ According to that source, commercial absorption in Inner Core/128 West submarket averaged 1.74 million square feet per year from 2009 – 2019. By comparison, the Build Scenario implies annual commercial real estate delivery of approximately 350,000 square feet per year from 2036 – 2040, or about 20% of the annual absorption for the past ten years. While this comparison does indicate a

³ The market area included the following municipalities: Arlington, Boston, Brookline, Cambridge, Chelsea, Everett, Lexington, Medford, Malden, Needham, Newton, Revere, Somerville, Waltham, Watertown, and Wellesley

substantial amount of market capture, it is, in MAPC's judgement, not an unreasonable share for such a prominent and well-situated site.

Figure 5: Study Area projected absorption rates



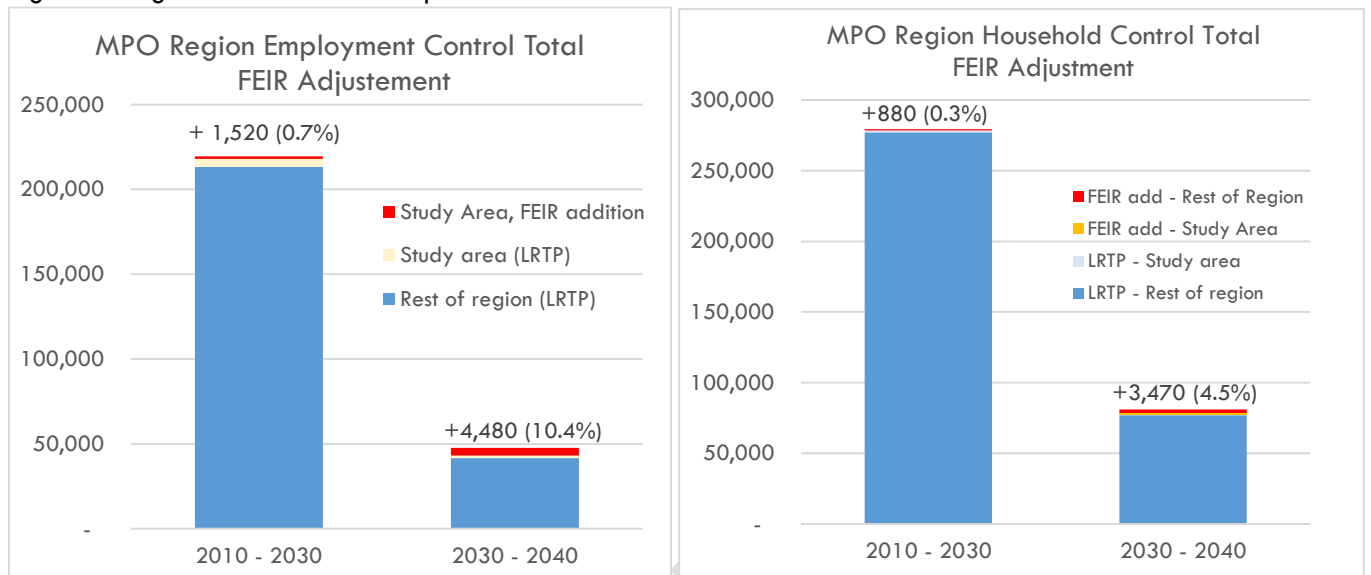
Regional Control Total Adjustments and Additional Household Allocation

As described above, MassDOT has indicated that the Build Scenario does not need to conform to the same regional control totals that were used for the Long Range Transportation Plan (LRTP) travel modeling, and additional employment or households associated with the build scenario do not need to be compensated for by reducing growth elsewhere. Furthermore, in order to maintain the labor force – jobs balance in the region, MAPC recommends allocating additional new households throughout the region *outside* the study area so there are enough workers to eliminate the need for any additional in-commuting to the region. The number of additional workers was derived from a method that accounts for the likelihood that a worker in a given industry is the head of a household, and the average number of workers in their household.

The robust economic development projected for the study area exceeds the LRTP projections by approximately 6,300 jobs in 2040, requiring an upward adjustment of approximately 2.9% to total employment growth projected from 2010 – 2040. As shown in the chart on the left below, most of this adjustment affects the projections for the 2030 – 2040 time period.

For households, not only does the proposed Build scenario include more households in the study area (about 980 additional households as compared to the LRTP) but it also entails additional household growth outside the study area in order to maintain the regional balance between labor force and employment. In total, the DEIR build scenario requires increasing the regional control totals for households by approximately 4,340, or 1.2% of the growth projected from 2010 – 2040. While some of this additional growth is projected within the study area, most of it must be accommodated elsewhere in the region. To accomplish this, MAPC specified the additional households that will be added, based on information about existing working households, and allocated them to TAZs outside the study area based on the previously projected distribution of similar households.

Figure 6: Regional Control Total Adjustments



Labels indicate numeric and percentage changes to regional control total growth

Table 1: FEIR Build Scenario, Total Employment by TAZ and Year

TAZ	FEIR Build Scenario Employment					DEIR Build Scenario 2040
	2010	2016	2030	2040	2010 - 2040	
238	624	798	798	798	174	626
244	1,083	1,522	3,034	3,034	1,951	3,447
245	474	634	4,542	6,592	6,118	5,135
246	583	583	583	4,671	4,088	6,007
Total	2,764	3,537	8,957	15,095	12,331	15,215

Table 2: FEIR Build Scenario, Total Households by TAZ and Year

TAZ	FEIR Build Scenario Households					DEIR Build Scenario 2040
	2010	2016	2030	2040	2010 - 2040	
238	0	325	325	325	325	325
244	867	867	654	654	(213)	654
245	54	54	678	1,426	1,372	379
246	0	-	-	1,487	1,487	1,523
Total	921	1,246	1,657	3,892	2,971	2,881

Map of Study Area TAZs



Map of Current Proposed Interchange and Street Grid



Allston I-90 Interchange FEIR Build Scenario Projections

APPENDIX – Analysis of Comparable Development Densities

Introduction

In order to inform the preparation of land use projections for Allston Landing South, MAPC analyzed recent, ongoing, and planned developments elsewhere in the region's core to assess the development densities, use mix, and parking availability of comparable districts and large-scale developments. This information will help to guide the assumptions used for development on the land made available through reconstruction of the interchange.

Development Densities in Comparable Sites across Metro Boston

Given the size of the site, its location between BU and Harvard University and adjacent to I-90, and the forthcoming Commuter Rail station, Allston Landing South's development can be compared to other "hot market" sites in the Boston area: Seaport District, Longwood Medical Area, and Suffolk Downs in Boston and Kendall Square in Cambridge. Information about these development sites and districts was sourced from permitting documents, project websites, and assessor databases. These sites share common themes: aggressive infill and high average FAR. Plans spanning the next 20 years for Seaport, Kendall, and Suffolk Downs add 19.3M square feet of development, ranging from 39 to 70% residential use (Table 1).

Table 1: Average FAR and Use Mix in Comparable Inner Core Developments

	Total Land Area (acres)	Development Area (square feet)	FAR	Residential (square feet) <i>percent of development</i>	Not Residential (square feet) <i>percent of development</i>	Parking (spaces) <i>Spaces per 10,000 square feet gross floor area</i>	Open Space (acres) <i>percent of total land area</i>	Infill (yrs)
Seaport	74.2	15.48 M	7.45	3.5M+ <i>39%</i>	11M <i>71%</i>	7,200+ <i>4.65</i>	14.9 <i>20%</i>	(2006-2022)
(Seaport PDA)⁴	33.5	7.72 M	Up to 7.55	3.2M <i>42%</i>	4.5M <i>58%</i>	5,500 <i>7.12</i>	7.8 <i>23.2%</i>	10 years (2013-2022)
Kendall	50	4.76M	4.3	400k + <i>11%</i>	3.14 M <i>89%</i>	3,000+ <i>6.30</i>	2.8 <i>5.6%</i>	(1965-Ongoing)
(MXD 2015+)⁵	4.3	1.06M	6.19	420K <i>39%</i>	646K <i>61%</i>	809 <i>7.63</i>	0.77 <i>8.3%</i>	(2015 – Ongoing)
LMA	131	20.4M	3.67	285K + <i>1%</i>	20.1M <i>99%</i>	6,000+ <i>2.94</i>	9.37 <i>7.2%</i>	(Ongoing)

⁴ <http://www.bostonplans.org/getattachment/2e0f672e-a739-4785-a23b-b1f54dbf9bde>

⁵ <https://www.dropbox.com/s/on06dg1hpmvww1t/2017-0205-IDCP-MXD-CONFORMING-HR.pdf?dl=0>

⁶ <https://static1.squarespace.com/static/51f173a6e4b04fc573b07c0c/t/5890c11e893fc01d6e8afab3/1485881644884/KSURP+Amendment+10+Final+Ordinance+12.21.15.pdf>

(2000 & later)	40	7.9M	7.71	166K + 3%	7.7M 97%	2,000+ 2.53	5.4 13.5%	(Ongoing)
Suffolk Downs Plan⁶	161	10.5 M	Up to 2.3	7.31M 70%	3.2M 30%	7,216 6.78	40 25%	15-20

The air rights above West Station increase the development potential of Allston Landing South. Four proposed Boston air rights developments – Parcel 12 and 145-165 Dartmouth (AKA Back Bay/South End Gateway), Fenway Center, and South Station – each have an average FAR greater than 6, in some cases up to 8.3. These projects add almost 5.5M square feet of development on a total of 18.6 acres, contributing nearly 2M square feet to Boston’s housing stock (Table 2). However these projects are all still in the planning phases, and the city has not seen completion of a major air rights development in decades.

Table 2: Average FAR and Use Mix in Boston Air Rights Developments

	Total Land Area (acres)	Development Area (square feet)	FAR	Residential (square feet) <i>percent of development</i>	Not Residential (square feet) <i>percent of development</i>	Parking (spaces) <i>Spaces per 10,000 square feet gross floor area</i>
Parcel 12	1.81	657K	Up to 8.32	150K* 22.8%	507k 77.2%	175 3.98
Fenway Center	3.63	1.1M	7.4 (Phase 1)	616K 56%	210K 19%	1,290 11.7
South Station	8.29	2.52M	7	321K + 12.7%	Up to 1.665M 66%	895 3.55
145-165 Dartmouth	5.2	1.37M	6.05	665K 49%	603K 51%	2,013 (no net new) 14.7

Additional Detail on Specific Sites/Districts

Seaport

Floor area and densities for the Seaport were derived from Boston assessors data. The Seaport district analyzed here includes all parcels seen below, in addition to those not yet built but specified in the Planned Development Area (shown in blue). The residential mix and overall FAR are likely underestimates,

⁶ <http://www.bostonplans.org/getattachment/dc3111e8-3c12-411e-920e-06b483ca6dc3>

as some parcels reported as having 0 or 1 as the development square footage. Parking data was pulled from BPDA and Parkopedia. Open space data was pulled from the City of Boston.



Seaport PDA

Statistics for the Seaport PDA was based on information in the November 2017 BPDA Board Approval Memo, found here: <http://www.bostonplans.org/getattachment/2e0f672e-a739-4785-a23b-b1f54dbf9bde>

Use mix, FAR estimations, and parking data are more reliable for this PDA than for the overall Seaport District, since they do not rely on incomplete or inaccurate assessor data.

Kendall

Calculations for Kendall include all parcels seen in the map on the following page. The data source is Cambridge Assessor data accessed via MassGIS; FY 2012 is the most recent year available. Additionally, the residential mix and overall FAR are likely underestimates, as some parcels reported as having 0 or 1 as the development square footage. For the purposes of FAR calculation, the MXD (shown in blue) and Volpe (shown in grey) redevelopment plans were included. Parking data was pulled from Parkopedia and open space data was pulled from the City of Cambridge.



Kendall MXD District

Calculations for the Kendall MXD district were based on the February 2017 MXD Infill Development Concept Plan:

(<https://www.dropbox.com/s/on06dg1hpmvwl/2017-0205-IDCP-MXD-CONFORMING-HR.pdf?dl=0>)

and the 2015 amendment to the Kendall Square Urban Renewal Area plan

(<https://static1.squarespace.com/static/51f173a6e4b04fc573b07c0c/t/5890c11e893fc01d6e8afab3/1485881644884/KSURP+Amendment+10+Final+Ordinance+12.21.15.pdf>)

Longwood Medical Area

Longwood Medical Area includes calculations for all parcels seen on the map on the following page, including those in grey. The residential mix and overall FAR are likely underestimates, as some parcels reported as having 0 or 1 as the development square footage. Additionally, mixed-use parcels did not designate use split. In many cases, partial parcels were developed. BPDA mapping indicates that the development of these partial parcels is not consistent with the dataset, as the following buildings (shown in black) were constructed after 2000 but haven't been recorded as such; overall, FAR is lower because it does not account for these developments.



Suffolk Downs

Information for Suffolk Downs was based on a February 2019 draft of the PDA Master Plan found here:

<http://www.bostonplans.org/getattachment/dc3111e8-3c12-411e-920e-06b483ca6dc3>