



**ECONOMIC BENEFITS OF THE I-90**

**ALLSTON MULTIMODAL PROJECT**

**TECHNICAL MEMORANDUM:  
SEPTEMBER, 2022**





**Quantitative Estimate of  
Economic Impacts**

# INTRODUCTION

This memorandum presents the study's estimate of the **quantifiable economic benefits** of:

- the construction of the I-90 Allston Multimodal Project;
- the construction of the future vertical development that could occur over time at Beacon Park Yard (BPY) as a result of the reconfiguration of the transportation infrastructure defining the Project site.;
- the long-term operation of the future vertical development.

The memorandum includes these sections:

- **Assumptions and Methodology**, including, for the future vertical development, the use of the buildout forecast developed previously by the Metropolitan Area Planning Council (MAPC).
- **The MassDOT Project**, providing the estimated benefits of constructing the I-90 Allston Multimodal Project itself.

**Vertical Development**, in which two sets of results are presented—those arising from the **construction** of the future development and those arising on a **recurring, annual basis** from the operation of the development once completed.

It should be understood that this economic impact analysis is limited to construction of the I-90 Multimodal Project and construction and long-term operation of the future vertical development at BPY. It does **not** address the quantifiable user benefits that the traveling public would derive from the improved transportation infrastructure. These important benefits are being analyzed by MassDOT as part of the Project's environmental documentation.

This memorandum differs from Chapter 1 of the published **Economic Benefits** report in that it includes the construction impacts of the MassDOT Project.



# ASSUMPTIONS

## *The MassDOT Project*

Construction costs for the I-90 Allston Multimodal Project are derived from MassDOT’s estimate, published in its Multimodal Discretionary Project Grant Application of May 23, 2022. In that document, total project costs are estimated as \$1.985 billion.<sup>a</sup>

These costs are escalated by MassDOT to the midpoint of construction, a standard practice when the approximate construction timeframe is known. That midpoint is assumed by MassDOT to occur in 2029.<sup>b</sup>

The MassDOT cost estimate includes \$11.02 million for right of way acquisition, which are excluded for purposes of this impact analysis , reducing the cost slightly, to \$1.974 billion. Of this, 50% is assumed to be labor (including in the various ‘soft cost’ areas) and 50% materials.

<sup>a</sup> Massachusetts Department of Transportation, Multimodal Discretionary Project Grant Application (May 23, 2022), pp. 8-9.

<sup>b</sup> *Ibid.*, Appendix A, p. 7.

# ASSUMPTIONS

## *Vertical Development at BPY*

The potential development buildout at Beacon Park Yard, as forecasted by the Metropolitan Area Planning Council (MAPC), is 11.17 million square feet, or 10 million exclusive of parking.<sup>a</sup> This buildout assumes a mix of uses: research and development, residential, office, hotel, retail, and cultural. The forecast includes terra firma as well as air rights parcels and represents a scenario for BPY’s long-term development potential, extending beyond the Project’s 2040 “Build Condition” horizon. MAPC estimates that one-third of the buildout will occur by 2040.

MAPC also assumes an illustrative mix of uses, consisting of 45% residential; 25% R&D and/or office; and 30% other, complementary uses (retail, hotel, institutional, cultural). According to the MAPC forecast, the non-residential components would accommodate about 12,400 jobs.

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<sup>a</sup> MAPC, *FEIR Build Scenario Projections* (2019). [As noted previously](#), the buildout *Inclusive* of structured parking is 11.17 million square feet. For purposes of this estimate of benefits, the parking component is excluded, along with the costs of transportation infrastructure and air rights decking.

The MAPC forecast is not based on any master plan. It extrapolates the order-of-magnitude development that could occur at BPY based on its acreage, benchmarked densities from similar precedents, and the anticipated requirements for infrastructure, open space, and parking.

In the long run, development at BPY could turn out to be lesser or greater than 10 million square feet—depending on economic trends, local planning and zoning, and other factors. Similarly, the development that actually unfolds could reflect different mixes of housing, R&D, and other uses. The MAPC scenario, while illustrative of a range of possible outcomes, is consistent with a walkable, transit-oriented, mixed-use district, combining a residential neighborhood with a center of jobs and innovation.

Using the MAPC scenario as a guide, an estimate has been prepared of the regional economic benefits that would flow from the construction of the BPY development and from its recurring, annual operation once it is built.

# METHODOLOGY

## *Input-Output Analysis*

Economic and fiscal impacts can be described as the sum of economic activity within a defined region resulting from an **initial change** in the economy, such as the opening of a new factory, mixed-use development project, or major infrastructure improvement. .

The estimated direct, indirect and induced impacts are often referred to as the “**multiplier effects**”. The inter-industry relationships are captured in an input-output (I-O) model.

Industry-specific input-output (IO) multipliers generated by EMSI were used for this analysis. With IO models, each round of impact uses inter-industry purchases to calculate an economic impact of jobs, earnings, and GDP.

Definitions for each round of impact are as follows:

- **Initial impact.** The “initial change”, which in this case applies to construction of the I-90 Allston Multimodal Project, future construction of vertical development on the BPY site, or annual operation of the future vertical development once built.
- **Direct impact.** The first round of changes across industries as they impact on other industries, demanding more goods or services from the industries in their supply chains.
- **Indirect impact.** Subsequent ripple effects resulting from the direct impact, including sales changes across broader supply chains, due to inter-industry effects.
- **Induced impact.** The change due to the impact of the new earnings created by the Initial, direct, and Indirect changes. These earnings enter the economy as employees spend their paychecks on food, clothing, and other goods and services.

# METHODOLOGY

## *Input-Output Analysis (continued)*

The total economic impact is the sum of all four rounds. In this analysis, impacts are calculated for three metrics:

1. **Jobs** created through the impact process.
2. **Earnings** paid out due to the impact process.
3. **Gross Domestic Product (GDP)**: value added through the impact process.

The analysis also estimates fiscal impacts associated with the “initial change”, including state income and sales taxes and municipal property taxes. It is important to understand that while the multiplier effects of a major development may be felt both inside and outside its host state and region, the income and sales taxes associated with the **initial change** are mostly retained in-state, and the property taxes flow entirely to the host jurisdiction—in this case, the City of Boston.

As noted previously, estimates for construction of the I-90 Allston Multimodal Project are based on MassDOT’s cost estimates, which are escalated to the midpoint of construction (2029).

The estimates for the vertical development are calculated in **constant 2022 dollars**, placing the results in a dollar value frame of reference familiar to the reader. By using constant 2022 dollars, the analysis does not need to account for future inflation. (This method is distinct from discounted cash flow analyses, in which an inflation rate and a discount rate are applied. The purpose in those cases is to estimate the present value of future incomes and expenditures in order to evaluate the risk and reward of an investment.)

The timing of future development at BPY is unknown; it would be phased in response to market conditions. For purposes of this analysis, the buildout is assumed to occur over a 17-year period, corresponding roughly to MAPC’s projection that about one-third would occur by 2040.

# THE MASSDOT PROJECT

## Construction Benefits

- Construction of the Allston I-90 Multimodal Project, as defined by MassDOT (the “initial investment” in Table C) would create an estimated **7,400 construction jobs** (each job a person-year), paying **\$987 million in earnings** and generating just under **\$2.0 billion** in total GDP (\$1.974 billion, the estimated construction cost exclusive of right-of-way). Dollars are escalated to the midpoint of construction.
- Construction also generates ripple or multiplier effects as the initial investment courses through the economy. As noted previously, the EMSI Input/Output analysis considers the initial change plus three layers of ripple effects. When these are considered, the total impact grows to nearly **18,000 jobs**, **\$1.8 billion in earnings**, and **\$4.1 billion** in total GDP.
- The Commonwealth would collect an estimated **\$43.4 million** in income and sales taxes generated by construction.

Includes horizontal infrastructure only,

Source: AECOM data on vertical construction costs in metro Boston.

<sup>a</sup> Dollars are escalated to the midpoint of construction (2029).

Table C: Economic Impact of MassDOT Construction <sup>a</sup>

Construction Period		
Category	Element	Estimate
Initial Investment	Jobs (person yr)	7,400
	Wages	\$987,060,000
	GDP	\$1,974,119,000
Direct Impacts	Jobs (Total)	2,100
	Earnings	\$184,896,000
	GDP	\$464,502,000
Indirect Impacts	Jobs (Total)	900
	Earnings	\$73,034,000
	GDP	\$168,571,000
Induced Impacts	Jobs (Total)	7,500
	Earnings	\$545,817,000
	GDP	\$1,474,728,000
Total Impacts	Jobs (Total)	17,900
	Earnings	\$1,790,807,000
	GDP	4,081,920,000
Construction Period Fiscal Benefits		
Income Tax	Labor	\$46,295,000
Sales Tax	Materials	\$3,085,000
Total Taxes		\$43,380,000



# VERTICAL DEVELOPMENT

## Construction Period Benefits

- Construction of the full buildout scenario as forecasted by MAPC (the “initial investment” in Table 1-1) could create an estimated **24,300 construction jobs** (each job a person-year), paying, in 2022 dollars, **\$3.0 billion in earnings** and generating **\$6.0 billion** (the estimated construction value) in total GDP.
- Construction also generates ripple or multiplier effects as the initial investment courses through the economy. As described previously, the EMSI Input/Output analysis considers the initial change plus three layers of ripple or multiplier effects. When these are considered, the total impact could grow to nearly **54,800 jobs, \$5.5 billion in earnings**, and **\$13.8 billion** in total GDP.
- The Commonwealth of Massachusetts could collect an estimated **\$151.5 million** in income and sales taxes generated by construction.

Includes vertical development only, exclusive of parking and infrastructure.  
Source: AECOM data on vertical construction costs in metro Boston.

Table 1-1: Economic Impact of BPY Construction (\$2022)

Construction Period		
Category	Element	Estimate
Initial Investment	Jobs (person yr)	24,300
	Wages	\$3,008,750,000
	GDP	\$6,017,500,000
Direct Impacts	Jobs	6,100
	Earnings	\$566,299,000
	GDP	\$1,737,423,000
Indirect Impacts	Jobs )	2,600
	Earnings	\$224,403,000
	GDP	\$624,372,000
Induced Impacts	Jobs	21,800
	Earnings	\$1,666,653,000
	GDP	\$5,420,003,000
Total Impacts	Jobs (Total)	54,800
	Earnings	\$5,466,105,000
	GDP	\$13,799,298,000
Construction Period Fiscal Benefits		
Income Tax	Labor	\$141,111,000
Sales Tax	Materials	\$9,402,300
Total Taxes		\$150,513,300



# VERTICAL DEVELOPMENT

## Recurring Annual Benefits

- Once the development is built, its operation—in wages, sales, supplies, and other expenditures—would produce a large **recurring or annual** impact, year after year. Again, development would be phased, and its annual impact in any given year would reflect only those portions that have been completed and opened. Once in place around 2050, the full program envisioned by MAPC could generate **12,400 jobs, annual wages of \$2.1 billion** and total annual GDP of **\$2.7 billion**.
- When the multiplier effects are added, the recurring annual benefit of the full development program could grow to 36,600 jobs, **\$4.2 billion in earnings** and **\$6.4 billion** in GDP.
- When the entire buildout is complete, on-going operations could generate an estimated \$238 million **annually** in state and local revenues—**\$151 million** in state income, sales, and hotel taxes, and **\$87 million** in Boston property taxes.

Table 1-2: Economic Impact of BPY Operations (\$2022)

Annual Operations, Year 20		
Category	Element	Estimate
Initial Change	Jobs	12,440
	Wages	\$2,058,350,000
	GDP	\$2,708,158,000
Direct Impacts	Jobs (Total)	6,100
	Earnings	\$609,637,000
	GDP	\$951,885,000
Indirect Impacts	Jobs (Total)	2,520
	Earnings	\$236,638,000
	GDP	\$384,696,000
Induced Impacts	Jobs (Total)	15,560
	Earnings	\$1,268,843,000
	GDP	\$2,327,443,000
Total Impacts	Jobs (Total)	36,620
	Earnings	\$4,173,468,000
	GDP	\$6,372,182,000
Annual Operations, Year 20, Fiscal Benefits		
Income Tax	Wages	\$96,536,600
Property Tax	Buildings	\$87,472,000
Sales Tax	Retail	\$40,625,000
Hotel-Motel	Hotel	\$14,105,000
Total Taxes		\$238,738,600

Source: A Better City, Inc./AECOM



# VERTICAL DEVELOPMENT

## *Concluding Observations*

The results reported here are estimates, based on a set of assumptions about events more than a decade in the future. To the extent that the buildout at Beacon Park Yard turns out to be less than or more than 10 million square feet, the economic impacts would vary accordingly. Similarly, if the mix of uses were substantially different than that assumed by MAPC, or if the ratio of square feet per employee were to change, the economic impact would be affected as well.

The estimates reported here, *although merely illustrative*, suggest a major, positive impact on this region's future economic condition. The total annual impact on GDP of \$6.4 billion represents 1.3% of the Boston region's annual GDP of \$480 billion—an exceptional impact for a single geographic location in a metro region of 4.9 million people.<sup>a</sup>

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Bureau of Econ. Analysis, <https://apps.bea.gov/regional/bearfacts/>; US Census, <https://drive.google.com/file/d/1qFbaEsxyyDtK1kr4LO2VvyixjBUPXJo/view>

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<sup>a</sup> The estimated earnings and GDP impacts reported here, in 2022 dollars, are in the billions. If a 3% discount rate were applied to estimates of activity occurring 20 years in the future, the present value is approximately 36% of the 2022 constant dollar amount; if a 7% discount rate is applied, the present value of activity 20 years in the future is approximately 23% of the 2022 amount. The discounted values would still be large.