

**Sourcing Cheaper and Greener Capital for Transit Oriented Developments**

by

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**ABSTRACT**

The concept of a Transit Oriented Development (TOD) today lies firmly in the urban planning realm as a fixture of sustainable development, smart growth, and new urbanism. What is missing is the ability use TODS beyond an urban planning tool into one where that can yield financial benefit for real estate developers by focusing on the environmental benefits in facilitating the modal shift from single occupancy vehicles to greener commuting options. This thesis establishes a hypothesis that if there was a manner in which the environmental benefits of a TOD could be accurately quantified and modelled then this could pave the way for real estate developers to source a cheaper and greener capital through qualifying ESG gains for impact investors.

First this thesis explores different technologies available in the market that could potentially offer this capability as a service. Second this thesis then proposes a pathway for how the quantification can be certified by suggesting amendments to the LEED certification framework in order to solve the information asymmetry between real estate developers and financiers. Finally, this thesis establishes a hypothetical case study for a new TOD in the Fort Point area in Boston to demonstrate the financial outcomes applying this newly proposed financial tool.

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## 1. Introduction

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The concept of 'Transit Oriented Developments' (TODs) has become a key component in the world of urban planning within the fixtures of sustainable development, smart growth, and new urbanism Yang (2008). Peter Calthorpe in his 1993 publication '*The New American Metropolis: Ecology, Community, and the American Dream*' was the first to really codify the principles of TODs that had emerged whereby TODs should:

- organize growth on a regional level to be compact and transit-supportive;
- place commercial, housing, jobs, parks and civic uses within walking distance of a transit stop;
- create pedestrian friendly street networks which directly connect local destinations;
- provide a mix of housing types, densities and costs;
- preserve sensitive habitat, riparian zones and high-quality open space;
- make public spaces the focus of building orientation and neighborhood activity; and
- encourage infill and redevelopment along transit corridors within existing neighborhoods.

Since the emergence of the concept there has been a stronger focus by city planners, transit agencies and real estate developers to leverage the integration between transportation and land use. These efforts have focused on several benefits that include:

- health benefits where community members engage in more active forms of mobility such as walking or cycling rather than on private vehicle usage (Renne, 2005);
- reduced greenhouse gas emissions in facilitating the modal shift to a greener form of commuting on a per capita basis (Ali et al, 2021);
- increased transit ridership can which in turn provides increase footfall for local businesses;
- more vibrant spaces with more mixed-use development that provides improved access to facilities and amenities for residents and workers; and
- increased financial returns through the value created from the synergy between land use and transit infrastructure.

Despite these theorized benefits, the practice of TODs has been implemented with mixed results. A simple review of different case studies on TOD projects shows that there have been varying degrees of success in delivering TODs across the globe as these are projects that face multi-dimensional challenges. This varying degree of success can partially be attributed to the lack of a strong set of consistent practices across the project formation, design, financing, delivery and marketing etc. This lack of consistency within the delivery of TOD projects has resulted in many of the theorized benefits of a TOD not being realized. Hank Dittmar (2004), the founding president and former CEO of Reconnecting America, in his publication '*The New Transit Town: Best Practices In Transit-Oriented Development*' reviewed the first generation of TODs a decade after Peter Calthorpe's publication and

noted that “many projects ended up becoming fairly traditional suburban developments that are simply transit-adjacent” that failed to meet the true objectives of a TOD.

The lack of a set of well-established practices recognized and adopted by all players within the TOD ecosystem has led to much more fragmented approach. For example, city planners might apply the concept of a TOD as an urban planning tool to facilitate more walkable neighborhoods; while transit agencies, such as the Metropolitan Transportation Authority in New York or the Bay Area Rapid Transit in California, leverage TODs as a way of using the private sector to fund or deliver infrastructure. For actors within the private sector such as real estate developers and lenders TODs are typically seen as a business-as-usual real estate project. Here proximity to transit is just another element to be considered in the underwriting of the project which is typically attributed to the assumptions on rental rates, sale prices, and occupancy rates. This has historically led to a focus on the physical form of a project where any remotely transit-related development is coined a TOD for marketing or branding purposes. What has received less attention is the functional performance of a TOD through the integration of real estate development, transit accessibility and land use in a way that creates both business value and also social value, in maximizing the total benefits that can be achieved.

One area that this thesis sees as an area for improvement in the implementation of TOD projects is the focus on environmental benefits of a TOD. This thesis argues that despite the theorized environmental benefits of a TOD in facilitating the modal shift from single occupancy vehicles to public transit, there has been no established practice in the industry to accurately measure this positive externality. Rather this work currently only exists in academia where most studies are carried out on an *ex-post* basis. As such this thesis hypothesizes that if there was a streamlined and cost-effective manner of quantifying the environmental benefits that could be achieved from a successful TOD project, then this could then be utilized to seek greener (and thus perhaps cheaper) forms of financing to deliver the project. This thesis therefore proposes that if the environmental benefits of a TOD could be modelled such that the results were certified by a trusted process, then real estate developers could seek preferential rates in negotiating for financing through ESG funds or loans with a sustainability focus.

By measuring and quantifying these benefits, real estate developers can start to accredit the value of their TOD as being more than just a --business-as-usual development. This thesis proposes that the benefits of proving this hypothesis could be:

- a developer is able to yield higher returns through a cheaper source of capital which makes TODs as an appealing project type. This would stand to allow more TODs to be developed such that the increased attention and competition would raise the overall quality of TODs as an asset class;
- financial institutions including limited partners on the equity side or lenders on the debt side could have a broader portfolio of projects to appeal to their investors and

shareholders in meeting their ESG goals by helping finance projects where the environmental benefits can be properly quantified;

- stronger collaboration between all players within the TOD ecosystem where private sector would have better aligned incentives with local municipalities and transit agencies to focus on the modal shift, which will maximize the business and social value creation process; and
- TOD projects to gain more community support where the outputs could be shown to local residents and end users to improve their understanding of the benefits of the proposed development in context of how their location choice and travel behaviors play a functional part in the fight against climate change.

Overall this thesis proposes that there is a better paradigm for financing TODs that can be achieved through a better practice of quantifying the proposed environmental benefits of a TOD project. This can then be utilized by a real estate developer to negotiate a cheaper source of capital through an ESG impact investment fund or financial lending institutions. This in turn would act as an incentive for real estate developers and lenders to view TODs differently and subsequently promote higher quality TODs and leverage more out of the synergies between the transportation and land use development.



## 2. Literature Review

### a) Transit Oriented Development Literature Review

Since 1993 when Peter Calthorpe first coined the term TOD the research in this field has grown significantly. The paper '*Transit-oriented development: A review of research achievements and challenges*' released by A. Ibraeva, et al.(2020) contains the most comprehensive and recent literature review of TOD publications. They found that the number of journal articles published has been growing year on year as illustrated in Figure 1.

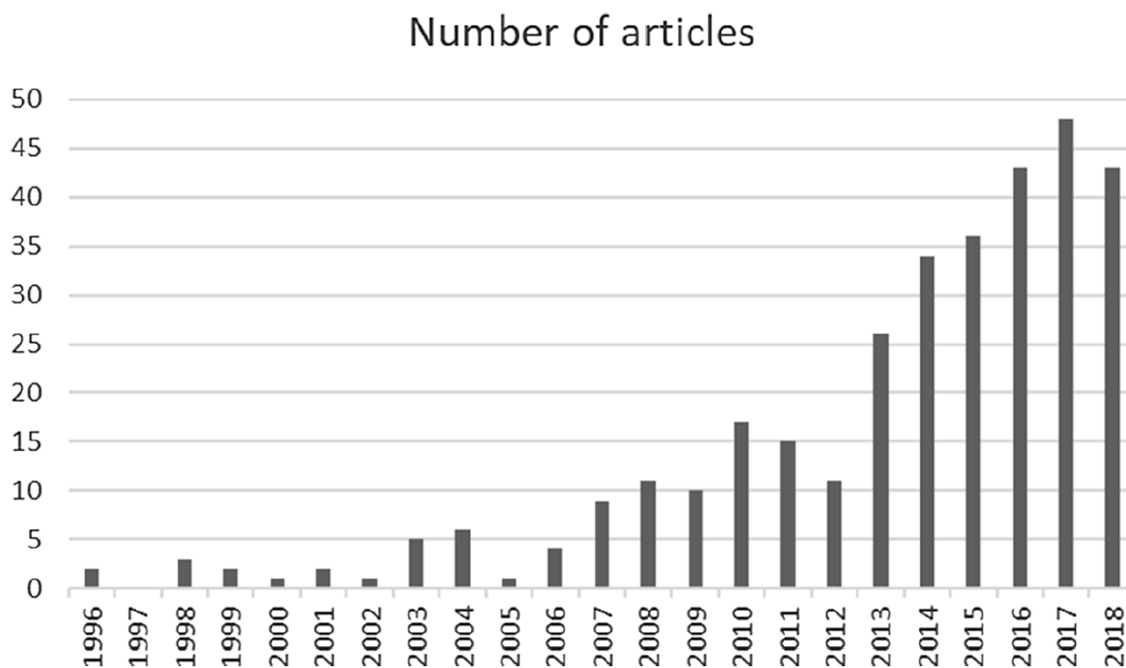


Figure 1: Number of research articles on Transit Oriented Developments from A. Ibraeva et al. (2020, 111)

A. Ibraeva, et al. (2020) found that the majority of the existing literature has focused on several thematic research elements for TODs that mainly cover:

- attempts at a clearer and more consistent definition of a TOD;
- the types of characteristics that form a TOD;
- efforts to establish TOD typologies and best practice urban planning approaches;
- effects of TOD on travel behavior, residential location, real-estate prices, urban form and community life; and
- policy related research including tools, regulations and legislations that can help support planning decisions.

Jamme et al. (2019) similarly conducted an extensive analysis looking at the past twenty-five years of literature on TODs with a focus on North America. On a similar perspective Jamme et al. (2019) highlighted nine separate recurring themes which were then measured in terms of frequency and number of publications. This has been reproduced in Table 1.

Table 1: Percentage breakdown of recurring TOD research themes from Jamme et al. (2019)

<b>Recurring TOD Research themes</b>	<b>Frequency as a Percentage of overall literature review</b>
1. Policy, Planning and Implementation	35%
2. Land Use and Transportation	29%
3. Community Development	12%
4. Smart Growth and Sustainability	9%
5. Urban Design	6%
6. Market Responses	6%
7. Concept	2%
8. Health	Less than 1%
9. New Technologies and Communications	Less than 1%

These two articles with an extensive analysis of the existing literature of TODs both highlight that a substantial amount of the research has centered on TODs as a public policy and urban planning tool. In particular there has been a strong focus on the physical and urban form of TODs to establish an approach to better integrate land use and transportation. These findings are corroborated at an international level, beyond the focus of North America, with a similar literature review conducted by the Swedish Knowledge Centre for Public Transit in 2020. This report identified that there is a large body of research on conceptualizing TOD as a policy and urban planning tool with different approaches for application including barriers, enablers and challenges.

All three of these extensive literature reviews have also identified several gaps in the existing literature for TODs. A sample of these include a cross-sectional time series study on the effect of TOD and urban form decisions on travel behavior, location choices for TODs in inner city areas as a strategy for urban regeneration and participatory planning processes by public transit agencies for the planning of the transport service itself and how this effects the proposed land use.

While these are important subjects to be studied, these are not however the focus of this thesis. One key element that has received minimal attention, and is therefore considered as a gap in the literature, is the quantification of the theorized benefits of a TOD, and how to integrate these broader benefits into a a financing framework for TODs. Specifically the environmental benefits and how they can be applied to further facilitate the financing and

implementation of TODs is an area of research that has received little attention and is therefore the focus of this thesis.

### b) Environmental Benefits of TODs

There have been several research papers in existing literature that have focused on analyzing the environmental benefits of TODs. These papers have primarily focused on the impact of TODs as a form of urban development to ameliorate the impacts of air pollution, greenhouse emissions, congestion and noise pollution created from fossil fuel powered private vehicles. These studies have in principle all identified that by effectively managing urban form and land use in a way that promotes public transit usage there is a positive effect in helping control the impact of harmful emissions and mitigations of greenhouse gas emissions.

In particular studies in specific geographic cities have measured the following positive impacts in the use of TODs on reducing greenhouse gas emissions:

- Shatu & Kamruzzaman (2015) found that in Brisbane, Australia, the availability of opportunities and services located within the transit oriented development catchment reduces car use by 5% while simultaneously increasing the usage of active transport in the same catchment by 4%;
- Ashik et al (2022) studied the impact of TODs in Dhaka, Bangladesh, and reported that TODs have the potential to reduce CO<sup>2</sup> emissions for more regular commuting trips such as for work and school trips;
- Faghri & Venigalla (2013) found that In Washington D.C. that areas served by transit experienced a decrease in trips by 30% for TODs compared to non-TODs in their developed regression model;
- The Center for Neighborhood Technology (2010) study for Chicago identified that with a good TOD growth strategy then growth in Vehicle Miles Travelled (VMT) related greenhouse gas emissions could be reduced by up to 36% with evidence that on an individual household level this can be as much as 78% if located in an efficient transit zone;
- Belzer (2002) in their analysis with their traffic consultant Nelson Nygaard identified that near the Pleasant Hill BART station in the Bay Area, residential developments generate 52% fewer peak period vehicle trips compared to ITE Trip Generation Manual typical projections while commercial developments generated 25% less.

These studies reflect the consensus of most academic researches that the use of TODs have the potential to reduce greenhouse gas emissions by targeting vehicle related carbon dioxide emissions.

### c) Gaps in Existing Literature

While these studies showcase the environmental benefits that TODs can have on reducing VMT related greenhouse gas emissions, these studies have limitations. First, most of these

studies show a degree of correlation between TODs and greenhouse gas emission reductions rather than demonstrating a causal relationship between TODs and a direct modal shift in a commuter's travel behavior and thereby leading to a reduction in greenhouse gas emissions. This was highlighted in Zhang et al's (2019, 508) literature review in the paper's study on whether subway proximity discourages automobile use in Beijing where they noted that "the vast majority of existing evidence is based on cross-sectional data and only confirms the correlations between land use patterns and travel, leaving causality unexplained or falsely claimed".

In particular the majority of these studies are based on surveys to identify consumer travel preferences or cross-sectional traffic data at an aggregated city level focused on a specific geographic location. They have not used a long term or consistent measure that is able to demonstrate a permanent modal shift in travel behavior derived from the TOD. According to Faghri & Venigalla (2013) the current forecasting models developed for TODs are either inaccurate or require too much expensive data. However even in Faghri & Venigalla's study an activity based 24-hr household travel survey data was used as a proxy which may not be representative of a wider TOD catchment nor capture a more regular commuting pattern over a period of time. This highlights a gap in the literature where no study has used any meaningful data gathering technique that can provide a long-term perspective to substantiate the actual modal shift and to do so in a highly granular and accurate method.

In addition, this thesis also highlights that despite these studies within the academic literature there has been no real application of these findings within practice or in industry. Faghri & Venigalla (2013, 79) notes that "transportation practitioners have been reluctant to fully utilize [trip forecasting models for TODs] in their traffic impact studies." Rather, urban planning has still largely continued to be practiced in the same form where these research pieces have only served on an *ex-post* basis to help validate a critical assumption that TODs can yield environmental benefits through reducing VMT related greenhouse gas emissions. Furthermore, most of these studies are conducted on an *ex-post* basis once the transit infrastructure or TOD projects have been completed such that there is no ability to influence the planning or design phase to achieve even more benefits.

Hence this thesis establishes a hypothesis for how TODs can not only demonstrate these benefits, but also leverage these benefits into a greener and cheaper form of financing which would channel more capital to TOD developments and thus create further value for practitioners which will in turn allow more TODs to be vigorously pursued.

### 3. Research Hypothesis

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#### a) Hypothesis

This thesis establishes a premise that TODs as a real estate asset should be capable of sourcing cheaper sources of financing. This is on the basis that TODs can yield substantial environmental benefits in facilitating the modal shift away from single occupancy vehicles into greener forms of travel. This can manifest in a higher utilization of public transit, a greater degree of micro-mobility options, and increased accessibility to opportunities or amenities. This thesis proposes that TODs should be considered as more just than a typical real estate asset whereby its ability to yield environmental benefits should be factored into its financing.

This thesis hypothesizes that in order for TODs to be viewed as a green project that can attain cheaper sources of financing then two critical ingredients will be needed. These are:

- I. a method to quantify the environmental benefits a TOD can achieve – there needs to be a cost-effective method that can reliably measure and predict the actual reduction amount of VMT induced emissions. This needs to be measured and modelled in the planning phase of a project
- II. a certification process which validates the quantified environmental benefits of a TOD – the certification process is intended to resolve the information asymmetry between real estate developers and financiers (such as equity partners or lending institutions) to rely on the substantiated results in order to provide more preferential rates or terms to finance TOD projects.

Underpinning this hypothesis is the assumption that TODs are currently delivered much like any other real estate asset. Rather TODs are seen as a much riskier product type with more challenges to implement for many reasons as outlined by the Transit Cooperative Research Program (TCRP) report (TCRP, 2004) on the challenges of TODs. In fact, it is more likely as Dittmar and Ohland (2004, 7) identified that financing is a barrier to TODs as traditional financing sources underwrite these assets as riskier developments where traditional sources of financing are structured to assess isolated single-use developments rather than the broader integrated outcome that a TOD project can deliver. This is particularly so where the underwriting of these projects has historically been predicated on a “purely financial rationale rather than a broad vision of how transit could work in tandem with the surrounding development” (Dittmar and Ohland, n.d.). These traditional metrics do not factor in an assessment of the environmental benefits in any materialized manner. This position is reiterated by Venner and Ecola (2007) whom also note that developers undertaking TOD projects have experienced more conservative underwriting parameters with more skepticism than average. One highlighted reason for the higher fiscal barriers are the higher construction costs and development fees compared to a typical real estate development project. These fiscal barriers typically require a longer term investment in

order for real estate developers and their investors to see a return, making it harder to turn a quick profit. Thus there is typically less interest in these projects which makes them harder to finance compared to a typical real estate development.

## b) Research Methodology

### Part 1) Assumption Confirmation

This thesis first sets out to confirm the assumption that the current industry practice of delivering TODs is much like any other traditional real estate development. That is, TOD projects are assessed by developers and financiers in the same form that they would on any other real estate project and apply similar processes to source their existing capital. In particular the focus was to confirm that a process as outlined in the hypothesis noted in Section 3 a) was not the current industry norm.

To test the assumptions several interviews were conducted with practitioners including developers, consultants and research academics in order to validate the assumption. The list of participant's titles and affiliations are outlined in Table 2. The intent behind the selection of interviewees was to cover a large breadth of different players involved with a TOD project. The specific selection of interviewees were to follow the research methodology outlined in this section to confirm the assumptions made in this hypothesis, explore different quantification methods and derive the necessary conditions for the hypothesis to be realized. This included the following categories:

- Practitioners – these individuals had specific experience in delivering TOD projects and could confirm the assumptions on the current practices for financing TOD projects;
- Academics – these individuals had previously or were currently pursuing research related to TOD projects and specifically on the environmental benefits of TOD projects. The purpose was for these individuals to establish the current status of TOD research in regards to the environmental benefits and whether they were leveraged in practice;
- Transit Agency / Transportation Policy Institution – these individuals acted on behalf of transit agencies or were in the field of advocating for best practice policy in related to transportation and land use. The purpose was to provide a public perspective to the proposed hypothesis and to understand whether there were any existing practices similar to the proposed hypothesis witnessed from the transit agencies engaged in supporting TODs originators or policy makers that supported TOD projects.
- Technology Company – these individuals represented new technology ventures in the pedestrian and transportation modelling space. They were interviewed in order to understand the capability offered by firms in the industry

Several attempts were made to reach out to financiers such as banks, lenders, debt funds, equity partners, limited partners etc however these attempts were unsuccessful in conducting an interview.

In addition, this thesis acknowledges that only a relatively small sample size of the industry was interviewed for the purpose of this research methodology. This thesis considers the selected sample of interviewees to be sufficient for the purposes of this research task in light of the combined depth and expertise of the interviewees. However, for future research purposes it is noted that further interviews should be conducted with each category in order to more deeply establish the reliability of the findings.

Interviews were conducted for approximately 30 to 45 minutes with consent of their views to be included in this thesis verbally provided by each interviewee.

**Table 2: List of Interviewees**

<b>Title</b>	<b>Affiliation</b>	<b>Category</b>
Principal, Commercial Real Estate	Integral	Practitioner
Executive Vice President	Hilco Redevelopment Partners	Practitioner
Senior Lecturer of Business Administration	Harvard Business School	Academic
Professor of Mobility and Urban Planning, Department Head	Massachusetts Institute of Technology, Department of Urban Studies and Planning	Academic
Graduate Research Assistant	University of Memphis	Academic
Director of Real Estate and Property Development	Bay Area Rapid Transit	Transit Agency
Senior Director of Real Estate	Massachusetts Bay Transportation Authority	Transit Agency
Research and Impact Director	Institute for Transportation & Development Policy	Transportation Policy Institution
Community Account Manager	ReplicaHQ	Technology Company
Co-Founder and CEO	Downtown.Ai	Technology Company

### Part 2) Quantification Method of TOD Environmental Benefits

As a second step this thesis then sought to establish a quantification method for measuring the environmental benefits of a TOD. This process involved a mixed method of analyzing existing methods within the literature and interviewing academics involved in this field.

In addition, this step involved conducting a discovery exercise on software platforms and technologies that could provide either the quantification method needed if one did not exist in practice or if an improved method could be sourced. A particular focus was held on whether any methods could be applied in a predictive modelling manner to assist in the planning and design phase of a project. This involved liaising with several technology companies to identify the breadth of their scope and how their technologies could be applied. Specifically this sought to explore different transportation modelling offerings and establish whether their software could apply enough granular data at a block level to assess the modal shift as a result of a TOD project.

It is acknowledged that the quantification of the environmental benefits step did not proceed any further to test an actual case study because of the time and budget limitations on the scope of this thesis. Rather as noted in the recommendation this is suggested as a next step with the intention of this thesis to scope the possible technologies that exists in today's market which can be applied to establish the viability of this thesis' hypothesis.

### Part 3) Certification Process

Third this thesis proposes a certification process to validate and substantiate the quantified environmental benefits assuming such quantification is possible. The purpose of this step is to solve the information asymmetry between real estate developers and financiers such that financial institutions can rely on the outputs of the quantification process. The premise proposed here is to allow financiers to rely on this certificate, much like a LEED certificate, and understand the degree of benefits and thereby be willing to provide preferential rates or terms in financing TOD projects.

This thesis proposes to modify the LEED certificate to reflect a more substantiated green credit rating system. This step involves a meta-analysis on existing forms of certification processes as well as identifying conditions for success in order to produce a widely accepted certificate which can serve as the basis for financiers to rely upon.

### Part 4) Case Study

Finally, this thesis applies the proposed hypothesis to a hypothetical case study to provide an example of the extent of the financial benefits that can be yielded and where these financial benefits are derived from.

The case study will be based upon a hypothetical project which was developed as a real estate studio project covering the 100-acre site within the Fort Point district in Boston, Massachusetts. In particular the focus of the case study was to complete a financial model that shows the impact that the hypothesis could have on a large-scale TOD project. The case



study will cover the quantitative financial impact from modelling different financial rates on the proposal and where the financial value created can flow in a modelled waterfall. The case study will also discuss from a qualitative perspective the manner in which the financing framework can promote TODs as a more scalable concept in a practical manner.

## 4. Interview Findings

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### a) General Findings

All the interviews conducted as part of this thesis confirmed the assumption that a TOD project is typically viewed much like any other traditional real estate asset. This was the expected result where the positioning of a TOD traditionally has focused on the proximity of public transit as the key factor for the underlying underwriting assumptions. Specifically, this is evidenced through the sale or rent premiums that is sought after in the underwriting as a result of the superior accessibility to transit (TCRP, 2004). In fact, this most likely derives from the mantra in real estate of “location, location, location” where the fundamentals of real estate in today’s norms drive the viability assessment and implementation processes for a TOD project.

Through this we can observe that the environmental benefits of a TOD project are generally missed where the focus has traditionally been on (1) assessing TODs through the lens of standard real estate metrics and processes and (2) the financial value purely of being close to transit derived from the willingness to pay by individuals or companies to locate close to those transit nodes.

### b) Sentiment of Financiers

A particularly stark element that stood out in the interviews was that for financiers, and in particular for lenders, the concept of a TOD was not typically even part of the conversation when sourcing financing. It was noted by one interviewee that had extensive experience negotiating these sources of capital that while some banks have mandates to deploy capital to help improve disenfranchised communities, these normally did not have any direct relationship to TODs nor were they an amount that would significantly make a materialized impact. Rather most of the criteria for financing for a TOD project complied with the standard assessment metrics and terms that a financier would apply to any traditional real estate project. In particular one participant noted that within the financing industry, it is most likely the case that construction lending is extremely unlikely to factor in TOD parameters. This is because the understanding of TODs and how they relate to more sustainable practices as a concept is an area that is not considered material on any lending criterion.

This is aligned with this thesis’ expected findings as the literature identifies that a project’s status as a TOD generally has no bearing on the palette of financing tools used (TCRP, 2004). The Transit Cooperative Research Program Report (TCRP, 2004) noted in their publication that “developers consistently stated that whether or not projects are TODs does not affect lending standards in terms of interest rates, points for securing loans, loan-to-value requirements, or debt coverage ratios.” Particularly in the lending sector, it is likely, as the literature has noted, that any borrowing to finance TOD projects is and continues to be highly institutionalized. This means that the standard metrics which apply will cause real

estate developers that engage in delivering TOD projects will face a higher degree of effort to obtain financing as these projects typically are more complex and riskier.

While this is likely to be the case for the debt market one opportunity that was identified by an executive at a reputable real estate development firm was that there may be some opportunity in the equity market for these types of projects. It was highlighted that certain sources of equity, also known as limited partners in a joint venture, could be willing to provide preferential terms or rates in financing these projects. This would be especially impactful where these equity providers have a strong interest in either ESG investing or impact investing. Particularly where the degree of interest has materialized into a mandate such that they have focused criteria on selecting projects which have a higher demonstrable impact, this was noted to be a strong opportunity where the proposed hypothesis could demonstrate some value. This was noted as a realistic opportunity where these types of investors would likely be more open to negotiate better rates and terms.

A similar point was raised by another interviewee where most of investments for TODs has typically derived from public sources. These traditionally have acted as the catalyst for private real estate development whereby the public infrastructure is constructed first and the real estate by private developers in the TOD equation follows subsequently once there is certainty around the transit. Within this private sector side, it was noted that very little has evolved for financing TODs over the past few decades within the United States. It was highlighted that the complexity, mixed-use nature, reliance on public infrastructure investments and the extended timeframes a TOD requires has created significant barriers for financing. Rather it was noted within the interview findings that the financing of TODs is an area where private sector investment could help foster further development in the practice of TODs particularly as institutional capital is becoming more pertinent around ESG mandates. It was noted as this sentiment of deploying patient capital centered around ESG goals then there may be a better alignment of interest in achieving a stronger degree of success that can provide better long-term value both financially and environmentally.

### c) Method to Quantify the Environmental Benefits of a Proposed TOD

The question was posed to all interviewees on whether or not in practice the environmental benefits of a TOD were assessed as part of the planning or development phase of a project. All interviewees that had industry experience noted that none of them were aware of any particular situation where the environmental benefits of TODs were typically measured as an industry norm. Rather the responses highlighted that the environmental benefits were widely accepted as a norm in all discussions, but no real measure was applied and no specific quantification or modelling process was undertaken. The usual practice that was noted were the traffic and pedestrian impact analyses, inclusive of any proposed trip generation assumptions following the Institute of Traffic Engineers (ITE) guidelines, that is typically required by local regulations. Furthermore, while the ITE guidelines account for

different land use in the trip generation assumption this does not account for measuring the affected carbon footprint from the TOD project.




Following an extensive review of existing literature on publications that have analyzed the environmental benefits of TODs, an interview was conducted with a researcher from the University of Memphis who has published the most recent paper on measuring the environmental benefit of TODs. It was confirmed through their most recent research, including their research's literature review, that most of the attempts for quantifying the environmental benefits of a TOD project were primarily for academic purposes. One reason identified was because of time and effort required to gather meaningful data that could allow a researcher to analyze travel behaviors. Typically, data, in the form of traffic data, is gathered about 5 to 10 years after the completion of a major transit infrastructure project. This is also normally gathered by public sources through traffic counts which can then be analyzed and corroborated into travel mode shift behaviors as an *ex-post* activity.

A similar point was raised by a professor at the Massachusetts Institute of Technology's Department of Urban Studies & Planning where previous research conducted that meaningful data took a significant amount of time and preparation to collect. In previous research cited there were significant efforts to source the degree of granularity needed which was undertaken through attaching a device to participants in the study to track their travel patterns. This was also noted as difficult research as the overall data was difficult to gather in ensuring the consent of the participants, time-consuming to establish the validity of the data over a consistent period and costly to implement. However, it was acknowledged that the research was conducted over a decade ago with likely technology that has evolved to mitigate a lot of these challenges.

From these interview findings it can be identified that most of the quantification processes do not exist on an *ex-ante* basis. They are also typically carried out for academic research purposes rather than for the actual implementation of TODs in practice. Therefore, it is likely that that either a method for quantifying the environmental benefits on an *ex-ante* basis in modelling the predicted modal shifts as a result from a TOD project either does not exist or does not have widespread adoption within the industry as of the time of writing.

This thesis then conducted a search across different technology service providers in the transportation industry focused on pedestrian and travel behavioral modelling. There was a particular focus on start-ups or recently founded companies to identify opportunities for providing a more accurate quantification and modelling method. For new technology venture platforms three specific firms identified. These were Replica HQ, Downtown.Ai and Safe Graph.

Table 3: List of Potential Technology Venture Companies

Company	Description	Website
 <b>Downtown.AI</b>	A cloud platform that applies proprietary machine learning algorithms along with large-scale mobile location data to analyze and forecast the movement and commuting patterns going down into a granular level - including pedestrian traffic, cars, public transportation and micro mobility commutes.	<a href="https://www.downtown.ai/">https://www.downtown.ai/</a>
	Provides high-fidelity data on commute patterns including bike and pedestrian traffic, network link volumes. Overlaid with demographic data to indicate retail spending, workforce profiles, freight logistics etc.	<a href="https://replicahq.com/">https://replicahq.com/</a>
 <b>SAFE GRAPH</b>	An open-source data analytics platform that provides detailed information about physical locations including transit nodes	<a href="https://www.safegraph.com/">https://www.safegraph.com/</a>

Interviews were conducted with representatives from Replica HQ and Downtown.AI while Safegraph did not respond for a request for an interview. The interviews with Replica HQ and Downtown.AI identified that:

- neither company currently conducted such modal shift modelling for the purposes of quantifying the environmental benefits of a TOD;

- both companies confirmed there would be sufficient data available based on mobile phone and cellular information such that this could be analyzed at the block level as opposed to the aggregated city level data. However, it was noted this would require additional design and coding work by a software architect to extract the specific data points to conduct the analysis;
- both companies said there was a high probability that their respective proprietary software could provide the predictive and analytical capability to quantify the environmental benefits on an *ex-ante* basis. It was noted their respective software, which both apply machine learning techniques, were based on desensitized mobile phone data with very granular detail. This data was then overlaid with demographic profiles that could analyze the change. However, both strongly suggested that further testing and a pilot case would be needed to ensure such predictive outputs were validated with the results being statistically significant; and
- while both companies noted that there was the potential for this to be offered as a capability if sufficient developed, there has been no existing known case where this has been conducted especially by a private real estate developer. It was noted that there would need to be sufficient demand in order for this to be developed up by these software companies.

From the interviews it can be established that there likely is no readily available technique that can be applied to quantifying the environmental benefits of a TOD and in particular on an *ex-ante* basis. Currently most of the quantification methods rely on traditional methods such as surveys or aggregated city level traffic data, but are primarily conducted for academic purposes. However it is likely that with newer technology offerings in the transportation modelling space, with companies such as ReplicaHQ and Downtown.AI, there is a strong possibility that this can be developed. For this to become feasible there will need to an ultimate demand for these services.

#### d) Opportunities – ESG Investing and Impact Investing

A consistent theme identified by all participants was that currently most of the financing that supports TODs were derived from public grants or public sources. It was noted that most of the value proposition of these funding sources focus specifically on the economic benefits arising from the public infrastructure. Here the real estate component of a TOD is generally an additional consideration as part of the wider economic benefits of a business case put forward for the public infrastructure. While the importance placed on the land value appreciation is a growing most business cases for large transit public infrastructure projects focus on the direct economic benefits derived from the infrastructure in and of itself. As such none of the funding is typically applied to the real estate component of a TOD. Even with the literature it was noted that there were a very small amount of circumstances where public transit authorities might dedicate a small component of their budget to provide seed capital for private developers to engage in the practice of developing TODs to

lower initial financial risks (Thorne-Lyman et al., 2011). It was noted this was to help catalyze the land use component where it was deemed that the private real estate needed to be proven out or needed to be strongly integrated into the transit infrastructure. Responses with representatives from the Bay Area Rapid Transit (BART) noted that the maximum extent was to provide written letters of support to help demonstrate their backing to the real estate developer. However, it was specifically noted that this did not extend to funding or even financing of any private real estate development even though those components could fit into a district's masterplan as a TOD.

Rather discussions with the interviewees all highlighted that while none of the proposed financing existed as of today for TOD projects there is a possibility for this type of financing to gain better traction with certain type of financiers. Specifically, equity partners that had a focus on ESG investing or impact investing were noted as more likely to participate in these types of financing if TODs could demonstrate their environmental value to attract these types of capital.

Related to this concept, other ideas which were noted include:

- the input that Corporate America might have on influencing these decisions especially when they are delivering large master planned communities such as that of the Google redevelopment in Silicon Valley or Amazon HQ2 in Arlington Virginia;
- if there were any additional programs that could be implemented in unison such as a Government backed program to provide tax credits then this could strongly appeal to investors.

It was noted that these types of investors are not sophisticated in the technical findings for deriving the benefits of a TOD project. It was therefore flagged that they would need to rely on some external certification or review process in order for these participants to truly engage. This aligns well with the information asymmetry issue flagged in this thesis which is proposed to be resolved through the modified certification process in Section 5.

#### e) Concluding Remarks

The anticipated results of the interview aligned with the expectations of this thesis and also the research that has been conducted in existing literature. It is therefore not surprising that TOD projects have experienced many difficulties and barriers to implementation.

While many agree in principle that TOD projects can create environmental benefits, the quantification process is currently limited to academic research and has not translated to any impactful outcomes in practice. There currently are very little benefits that are derived from studying these benefits which in part is contributed to by the challenges in accurately quantifying and predicting these benefits. In addition, the challenges extend to the timing of the exercise where they are typically conducted *ex-post* rather than *ex-ante*. This is critical as the planning phase of a TOD project can derive the most impact to a project and help to establish the financing sources. While currently there is unlikely to be a readily available and

cost-effective method, emerging technology that applies machine learning techniques could provide a solution with companies such as ReplicaHQ and Downtown.AI showing promise.

Areas of opportunities identified from the interviews which should be pursued further for investigation are ESG funds or impact investors that are more likely to open conversation regarding projects that can demonstrate substantial environmental value. These may provide an avenue to support the financing of TODs in negotiating preferential terms or preferential rates that could provide the tipping point needed to enable these types of projects. A key component proposed to support this process is providing a trusted certification process that these investors can rely upon to deploy their capital.

This thesis now continues to review existing certification processes that exist in the real estate industry, and particularly for TODs, and propose a way forward.



## 5. Certification Process

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### a) Introduction

The current methods for financing TODs are filled with challenges and difficulties. In one study conducted by Tan et al. (2014) a substantial amount of the experts interviewed noted that financing was one of the most crucial components in delivering a TOD. It was noted that TODs faced many challenges as they are characterized by a risk profile that most financiers are simply not familiar with. In particular TODs typically require a significant amount of time to deliver and therefore longer to achieve returns. This therefore requires both longer term capital and less weighting on non-time based financial metrics such as an Internal Rate of Return (IRR).

Venner and Ecola (2007) in their paper '*Financing Transit-Oriented Development*' noted that despite the development and lending communities becoming much more aware of TODs, the lending process is still very much institutionalized. In several discussions and interviews within the development and lending community, Venner and Ecola (2007, 18) note that lenders typically attribute the uncertainty of mixed-use development that normally characterizes a TOD to any and all TOD projects which then can hamper the overall financing options of a particular TOD project. In addition, these projects usually have longer development timelines, require higher carrying costs, are more public in nature and involve a larger degree of complexity. These elements are exacerbated especially if there is a strong reliance on the public sector, such as a transit agency, to provide a ground lease or are responsible to deliver parts of the public infrastructure. These factors culminate into a higher risk profile which therefore applies more pressure for developers delivering TODs to generate a higher return. It is a possibility that some of these lenders may have a higher awareness of TOD projects particularly in the context of a growing sentiment for ESG. This is particularly pertinent in the context of COP26 which featured heavily the role that finance will play in the transition to net-zero emissions<sup>1</sup>. However, through the findings from the interviews suggested that it is unlikely that the hypothesis proposed in this thesis would be realized with the lending community as they are more likely to resort to their standard practices as the default in assessing the provision of loans for a TOD project.

Rather within the capital stack for financing a TOD project it is more likely that the equity financing is an area where the hypothesis in this thesis is more likely to be realized. This is because there tends to be a higher degree of equity in the capital stack for TOD projects compared to a typical real estate project. Venner and Ecola (2007, 17) highlights this in their paper where there usually exists "more pressure on TOD developers to present a solid equity position and prove they have the know-how and wherewithal to carry a risky project

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<sup>1</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-glasgow-climate-pact/cop26-outcomes-finance-for-climate-adaptation>

through.” It is in this source of capital that this hypothesis could have a strong likelihood of success in negotiating more favorable outcomes that leverage the environmental benefits. This aligns with the views from the interview findings where a lot of focus was on the possibility of ESG investors or impact investors that would be potential equity partners and be more willing to negotiate preferential terms or favorable rates to incentivize a TOD developer to succeed. However, this thesis views that that a fundamental condition of success lies in the ability to demonstrate the ESG benefits of a TOD to these equity partners. Assuming that the tools are available on the basis of the findings in Section 4, then this thesis has the view that it is critically important that the findings are certified through a trusted source to enable these capital partners to trust the results to enable them to deploy their capital. As such this thesis now subsequently reviews existing certification processes which can act as the documentation to help these ESG or impact investors engage in the process.

Finally, it is noted the focus of this thesis excludes the small number of sources which could provide direct financing options for TOD projects. This is because those sources are generally limited in nature and the quantum of the funding is generally quite small. As such these sources do not typically materially impact the overall financing and therefore have been excluded for the purposes of research in this thesis.

#### b) TOD Certificate

A certificate specifically for TOD projects that exists but has little recognition is the Transit Oriented Development Certificate. This certificate is governed by the Transit Oriented Development Institute which on the website highlights that it is “a national project evaluation and endorsement program to promote sustainability”<sup>2</sup>. An excerpt from the website is included below:

##### **TRANSIT ORIENTED DEVELOPMENT CERTIFICATION**

The Transit Oriented Development Certification is a national project evaluation and endorsement program to promote sustainability by highlighting exemplary projects showcasing TOD best practices. TOD has proven highly successful in creating vibrant, livable, sustainable communities that are successful financially, as well as creating great places for people to live, work, and play.

TODs are a major solution to climate change by creating low-carbon lifestyles with more walking and less driving. The goal of the program is to give national and international recognition to visionary projects to help accelerate TOD best practices and advance the next wave of Transit Oriented Development across America and around the world.



**Figure 2: Excerpt from the Transit Oriented Development Institute Website**

The TOD certificate utilizes a star rating as a TOD seal where the highest possible score is a 3-star rating and lowest is a 1-star. Eligible types of projects include infill development, building conversions, clusters of buildings part of a precinct or new neighborhoods and

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<sup>2</sup> <http://www.tod.org/certification.html>

large-scale developments. The assessment process evaluates the submitted project based on following criteria:

- 1) Well defined public spaces - outdoor rooms
- 2) Mix of uses - lively, vibrant places
- 3) Quality pedestrian experience
- 4) Human-scale architecture
- 5) Active ground-floor retail
- 6) Tree lined streets
- 7) Easily accessible by bicycle
- 8) Reduced and hidden parking
- 9) Affordability
- 10) Expandability

The website lists several projects which include Bethesda Row in Maryland, the Wharf in Washington D.C., Hudson Yards in New York, Transit Bay Center in San Francisco and Downtown Kendall Square in Cambridge as a sample of projects which have received the TOD certificate.

Upon a wholistic review of the offering by the TOD certificate this thesis does not view the one offered by the TOD Institute as adequate for serving the purpose of this thesis' hypothesis for the following reasons:

- there is a mandatory requirement of having close proximity to a rail station – here only projects within a ½ mile radius of a rail station can be eligible for the TOD certificate. This is extremely limiting as TOD projects can work with multiple forms of transit other than rail. This can include rapid bus transits, ferries or micro-mobility hubs. However, this requirement is not surprising with the focus on rail as the TOD Institute is a project of the US High Speed Rail Association;
- the criteria are predominately focused on urban planning outcomes based on an assessment of the urban planning and design practices – the criteria lack a real quantitative component to measure the actual benefits achieved on the project but rather rely upon the subjective expertise of the assessors;
- the TOD certificate has little recognition and likely has little adoption within the private sector industry - It is noted that within all the interviews no participant specifically knew of the existence of this certificate indicating very little knowledge of the existence of such a process. This is despite the website noting that “certification gives your project national recognition, and highlights it as a national model for Transit Oriented Development”; and
- the TOD certificate does not provide recognition as to the landownership structure and how individual real estate assets are assessed. It is noted that many of the projects listed on the website cover large areas or precincts that involve fragmented land ownership. Applying a TOD certificate that covers the entirety of the precinct

without considering the specific land ownership and how the benefits are attributed would be a significant hurdle for the proposed hypothesis in this thesis.

### c) LEED Certificate

The Leadership in Energy and Environmental Design (LEED) certificate is one of the most well established and well-known green building rating system in the world. It is managed by the US Green Building Council and covers several types of projects from new Building Design + Construction (BD+C), Interior Design + Construction (ID+C), Operations + Maintenance (O+M), Residential, and Cities and Communities.

An excerpt from the website is included below to describe how LEED works through its scorecard rating system.<sup>3</sup>

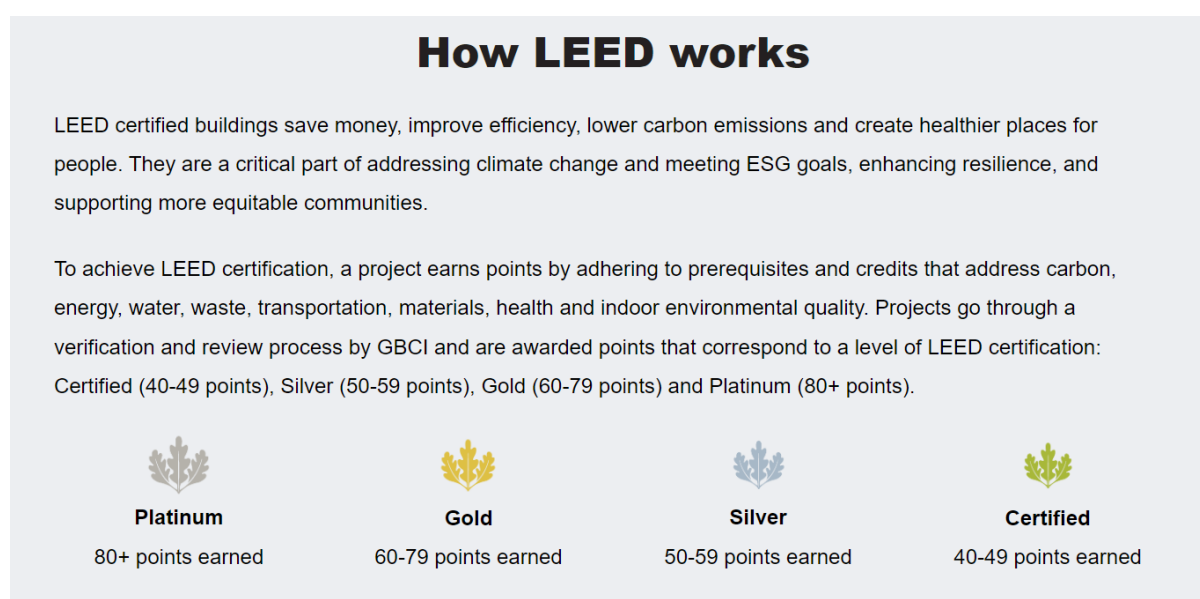


Figure 3: LEED Certification Website Excerpt

TOD projects would most likely fall under either the BD+C, Residential (Multi-Family) and Cities and Communities. Each of these include a section allocating possible points for the category of 'Location and Transportation'. The assessment criterion under the category of Location and Transportation includes:

- LEED for Neighborhood Development Location
- Sensitive Land Protection
- High Priority Site and Equitable Development
- Surrounding Density and Diverse Uses
- Access to Quality Transit
- Bicycle Facilities
- Reduced Parking Footprint

<sup>3</sup> <https://www.usgbc.org/leed>

- Electric Vehicles

with a possible range of points ranging from 15 to 20, depending on the project's classification, within a total possible of 110 points. The category of Location and Transportation sits amongst other categories of how sustainable the site is, water efficiency, energy and atmosphere, material selection and resource indoor environmental quality, innovation and regional priority etc. Proponents applying for LEED can achieve a full score under Location and Transportation for qualifying under the LEED for Neighborhood Development criteria of which the stated intent is "To reduce vehicle distance traveled. To enhance livability and improve human health by encouraging daily physical activity." Alternatively, proponents applying for LEED can qualify on an individual criteria basis of which the main criteria relevant are:

- Surrounding Density and Diverse Uses – "To conserve land and protect farmland and wildlife habitat by encouraging development in areas with existing infrastructure. To promote walkability, and transportation efficiency and reduce vehicle distance traveled. To improve public health by encouraging daily physical activity."
- Access to Quality Transit. – "To encourage development in locations shown to have multimodal transportation choices or otherwise reduced motor vehicle use, thereby reducing greenhouse gas emissions, air pollution, and other environmental and public health harms associated with motor vehicle use."

This thesis highlights that there is a strong focus to reduce the total vehicle distance travelled with points scored for promoting a modal shift away from driving. A key component of assessment is ensuring that there are diverse transportation choices available which can facilitate the modal shift away from single occupancy vehicles that utilize a combustion engine. While these are positive measures and the descriptors are thoughtful in establishing a broader range of transit modes, that is unlike the TOD certificate this specifically also includes rapid bus transit and ferries, however there is little application within the LEED certificate to account for a more quantitative assessment. In particular while it assesses the availability of options that could promote the modal shift, the LEED certificate does not actually require a proponent to quantify the modal shift and predict how the project will actually perform. Rather to score points the proponent seemingly only needs to show that sufficient availability of transit choice is provided that therefore could facilitate the modal shift.

It is also noted that the new category of projects 'Cities and Communities' now has started to apply the term Transit Oriented Development. This is included in the highest scoring criteria within the category of Transportation and Land Use as indicated in Figure

<b>TRANSPORTATION AND LAND USE</b>		POSSIBLE: 18	POSSIBLE: 18
Credit	Compact, Mixed Use and Transit Oriented Development	6	6
Credit	Walkability and Bikeability	4	4
Credit	Access to Quality Transit	2	2
Credit	Alternative Fuel Vehicles	2	2
Credit	Smart Mobility and Transportation Policy	2	2
Credit	High Priority Sites	2	2

Figure 4: Transportation and Land Use Category Criteria under Cities and Communities LEED Project Type<sup>4</sup>

The stated intent here is “To encourage compact and mixed-use development, high levels of connectivity and daily walking, biking, and transit use.” In the description document for this project category the guidelines refer to the TOD guidelines established by the Institute for Transportation and Development Policy. While once again this is a positive step to establish the necessary urban planning practices to achieve strong urban planning outcome, there is little actual quantitative measures that are included in the assessment criteria. As such there is little that is captured on the predicted modal shift that can therefore account for the ESG benefits.

#### d) Proposed Certification Process

In assessing the two existing certifications that provide the most relevancy to TOD projects for environmental sustainability, this thesis proposes that enhancing the LEED certificate to account for the quantification of the environmental benefits of a TOD is the most apt option. As the LEED certificate is highly recognized and well adopted across the industry, this process can attach on to an existing process and certification framework that is well established and recognized. This is contrasted with the TOD certificate which has little recognition and industry adoption. It is likely that applying the existing TOD certificate by the TOD Institute or proposing any new TOD certificate that specifically focuses on a TOD project will need significant time and effort to ensure widespread industry adoption before the hypothesis in this thesis can be realized. In addition, the existing LEED certification process can also apply to a granular real estate asset level as well as a wider precinct level while the existing TOD certificate only works at a precinct level. Hence adjusting the LEED certification process is considered more appropriate as this aligns better with the needs of the hypothesis.

As such this thesis proposes to enhance the LEED certificate by:

- establishing a separate project qualification under LEED which focuses on TODs – here there would be higher weighted criteria on the transportation and land use component. This would include scoring points for being able to demonstrate and prove the environmental benefits of the TOD by quantifying the benefits; or

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<sup>4</sup> <https://www.usgbc.org/resources/leed-v41-cities-and-communities-plan-and-design-scorecard>

- qualifying as a ‘booster’ that can enhance the scores within an existing project type (such as BD+C or residential) – this can be implemented as either a multiplier effect or additional bonus points in the case where the environmental benefits of a TOD can be proven.

The process would need to be clear on whether the application is made on a single real estate asset in which the individual design aspects of the asset whether this is on a wider precinct scale. On an individual asset level, the process would involve a more heavily process to scrutinize the individual design aspects while the wider precinct scale would consider the broader context of the masterplan. However, it is noted that for a wider precinct scale fragmented ownership creates challenges for attempting to attribute the specific contribution of the environmental benefits. This

It is the view of this thesis that modifying the LEED certification process, of which the development and financing industry are both familiar with LEED, can allow the hypothesis within this thesis to more likely be realized. This is because using an existing process that is already considered standard practice in the industry would allow for a higher speed of rollout, a higher likelihood of adoption and to be done in a much more cost-effective manner in leveraging an existing certificate’s branding rather than setting out a new certification process.

## 6. Hypothetical Case Study – Fort Point Channel

### a) Introduction

This thesis now illustrates the impact of the proposed hypothesis through a hypothetical case study for a new TOD in the Fort Point Channel in Boston. The TOD project would have a single ownership structure. This thesis will take the submission from an assignment as part of the 11.303 Real Estate Studio subject at the Massachusetts Institute of Technology's Masters of Science in Real Estate Development as the basis for the hypothetical case study.

As part of the 11.303 Real Estate Studio assignment, teams were required to respond to a Request for Proposal released by the Massachusetts Port Authority to develop up one or more land parcels within the Fort Point District. The parcels available for development within the overall 100-acre site is shown in Figure 5. This thesis uses the submission by "Team AFD", whom nominated the combination of parcels A2 and A3, because of their proposal to build a new rail station adjacent to the Boston Convention & Exhibition Center (BCEC).

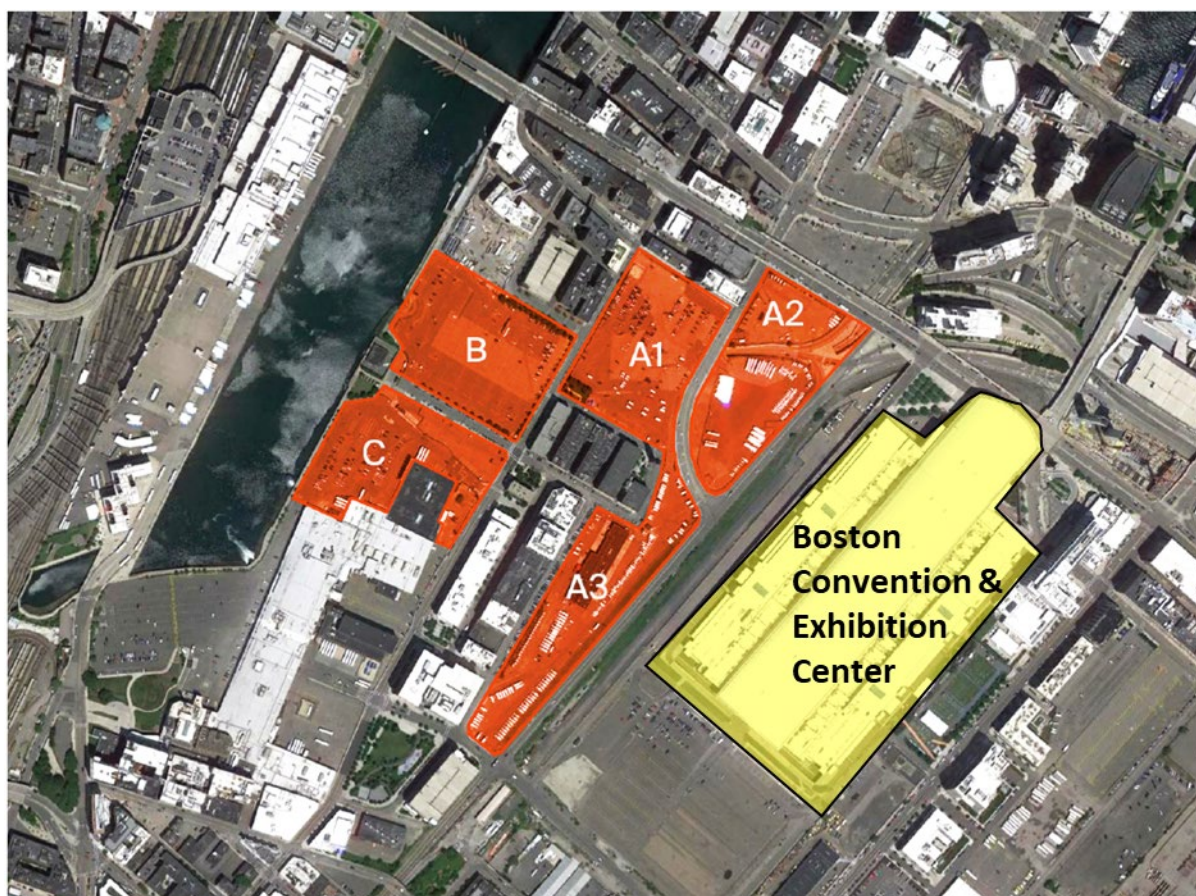


Figure 5: 11.303 Real Estate Studio Assignment - Available Parcels for Development in the Request for Proposal



## b) Site Context

The 100-acre site (“the Site”) is located South of Seaport, West of South Station and is directly adjacent to the BCEC as shown in Figure 6. The Site is located within the jurisdiction of the City of Boston and includes 32.8 acres of underutilized land in South Boston. The area currently contains Gillette Company’s major razor manufacturing facility, a significant collection of 19<sup>th</sup> century brick-and-beam warehouses, which have undergone an adaptive reuse process, and parking and maintenance yards owned by the US Postal Service (USPS).



Figure 6: The 100-acre site

From a transportation perspective the Site is located 1 mile west of South Station which contains Amtrak services, Red Line MBTA services, Silver Line MBTA, Commuter Rail services and bus services. While there are some transit options within the area, the specific area lacks a direct connection to any particular transit node as illustrated in Figure 7. Connections to both the Silver Line and the Red Line are beyond the half mile radius with sporadic bus services available servicing the secondary bus stops.



Figure 7: Transportation Context

### c) Proposed Development by Team AFD

As part of the submission by Team AFD, parcels A2 and A3 were selected which totaled a development site of 13.5 acres. The proposed development for the two sites totaled 3.1 million square feet of development with a Floor Space Ratio (FSR) of 5.3. A key component of the proposal was the inclusion of a new transit station that could directly serve both the 100-acre site as well as the BCEC. A site context plan with the proposal is shown in Figure 8.

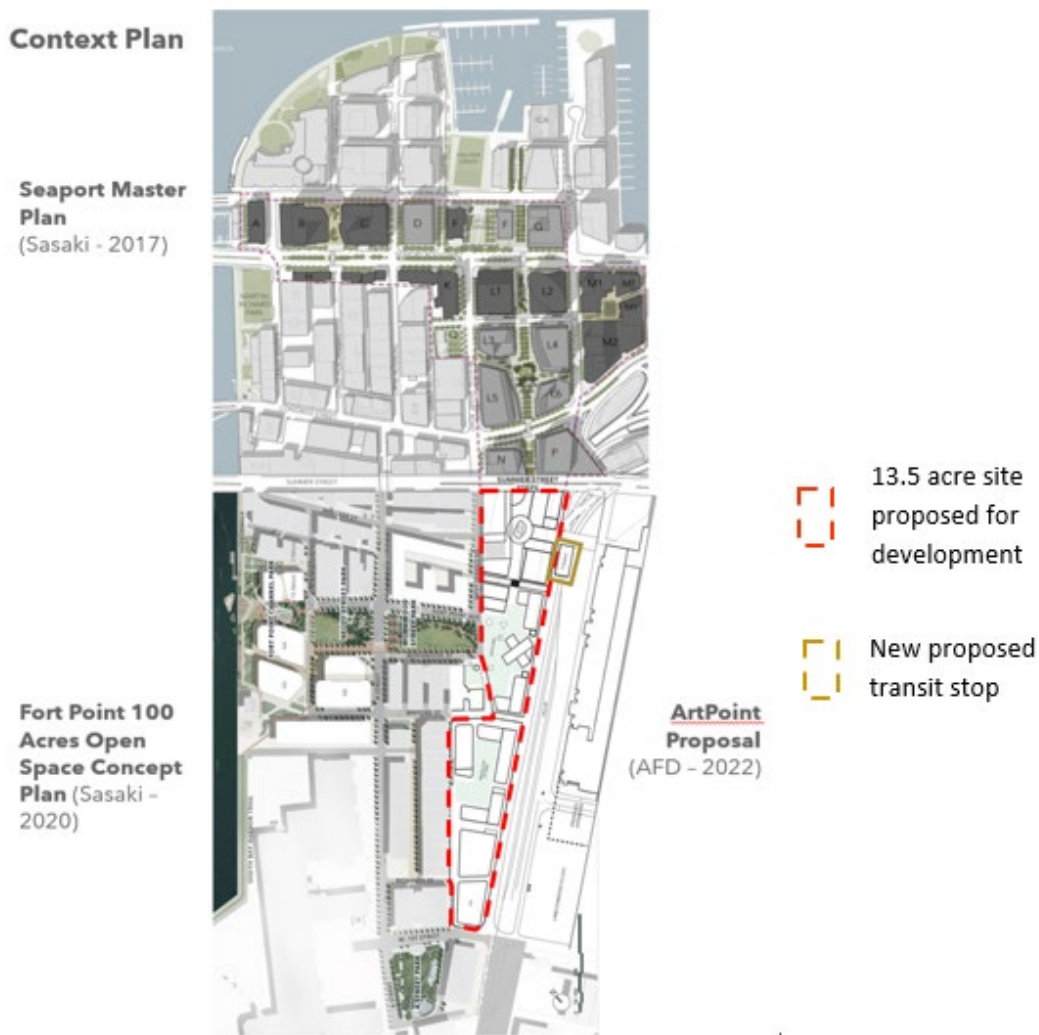


Figure 8: Site Context Plan

The proposed development, titled “ArtPoint”, proposed to transform the existing USPS training ground into “new cultural heart for the arts and creative industry by engaging artistic, educational and commercial neighbors through excellent design, practices and programs.” (See Appendix for full RFP response)The proposed development and mix of uses between the 3.1 million square feet of development is illustrated in Figure 9.

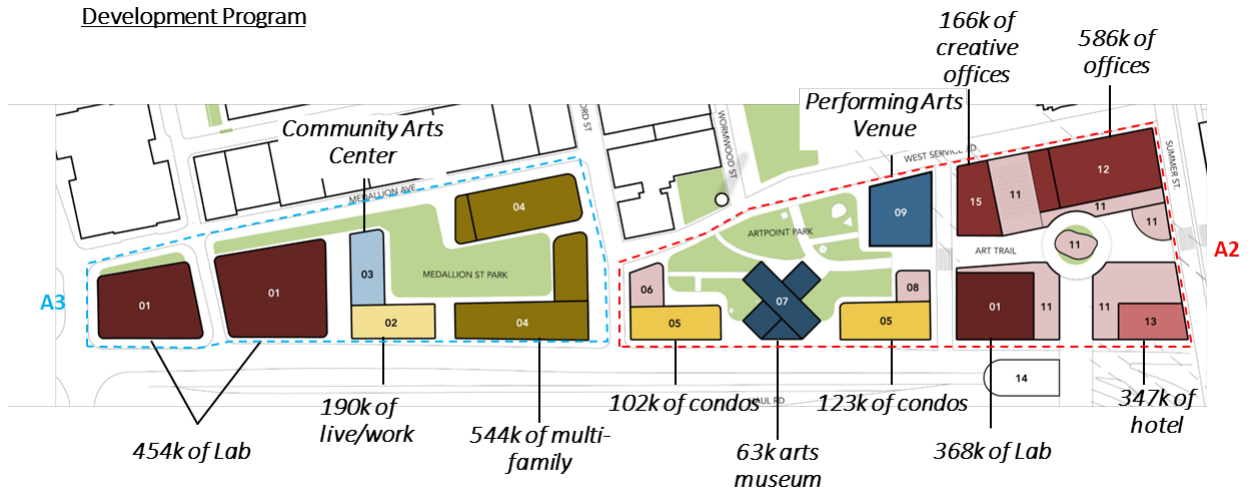


Figure 9: ArtPoint Proposed Development Program

#### d) Transit Oriented Development – Transit Component

A critical component of the proposed development is a newly proposed transit hub that is intended to serve the new developed precinct ArtPoint, the Boston Convention and Exhibition Center and the wider South Boston Waterfront Innovation (or otherwise known as the Seaport District). The new transit hub proposed is a rail connection that will recommission the existing disused Track 61 into revenue service primarily providing commuter rail services. The submission also noted the possibility of commissioning special Amtrak services on days with special particular events at the BCEC as well as shuttle MBTA services from South Station. An image of the existing line for Track 61 and proposed station is shown in Figure 10.

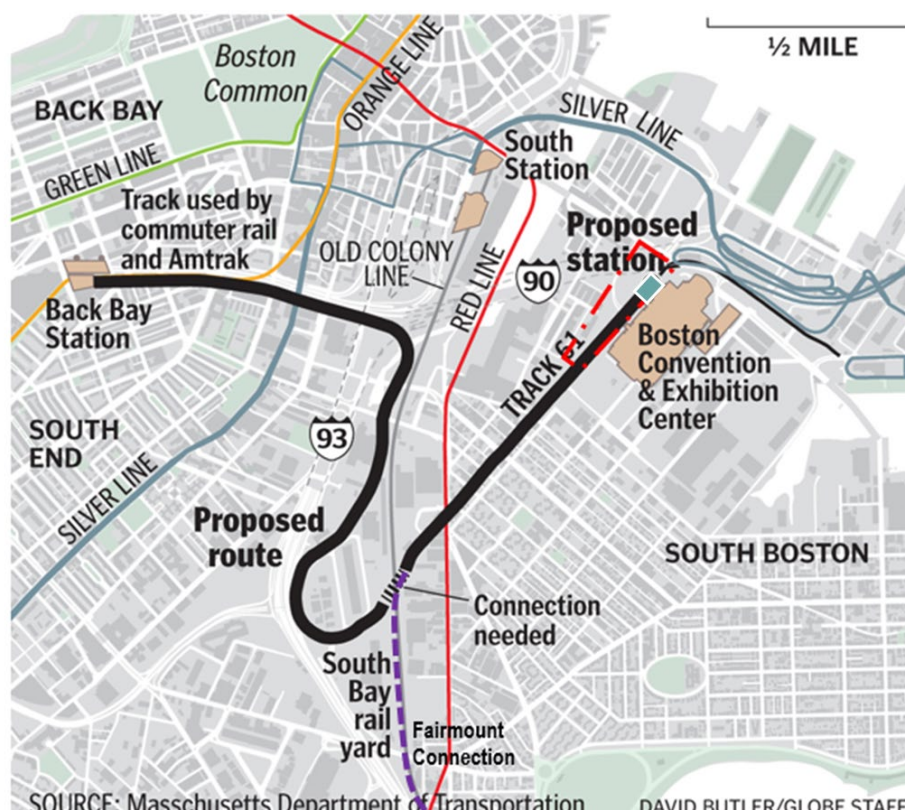


Figure 10: Proposed new Transit Station with the proposed route using Track 61

#### e) Proposed Financing

The submission by Team AFD had proposed a financing strategy where:

- the General Partner (GP) or developer contributed 10% of the total equity with a Limited Partner (LP) providing the remaining 90% of the equity on a pari-passu basis;
- the promote structure was 20% promote above an 8% preferred return;
- the total equity in the capital stack was 35% with the remaining development costs financed through debt on a 65% loan to cost (LTC) leverage ratio. The debt had a 30-year amortization period with interest at a fixed rate of LIBOR (2.23% at the time) plus a 300 basis point spread;
- there were applicable 4% LIHTC tax credits for the affordable housing component

This allowed for team AFD to offer a total ground lease payment of \$721 million to secure the development rights which was in addition to an amount of \$75 million to construct the new transit hub.

The proposed sources and uses are shown in Figure 11.

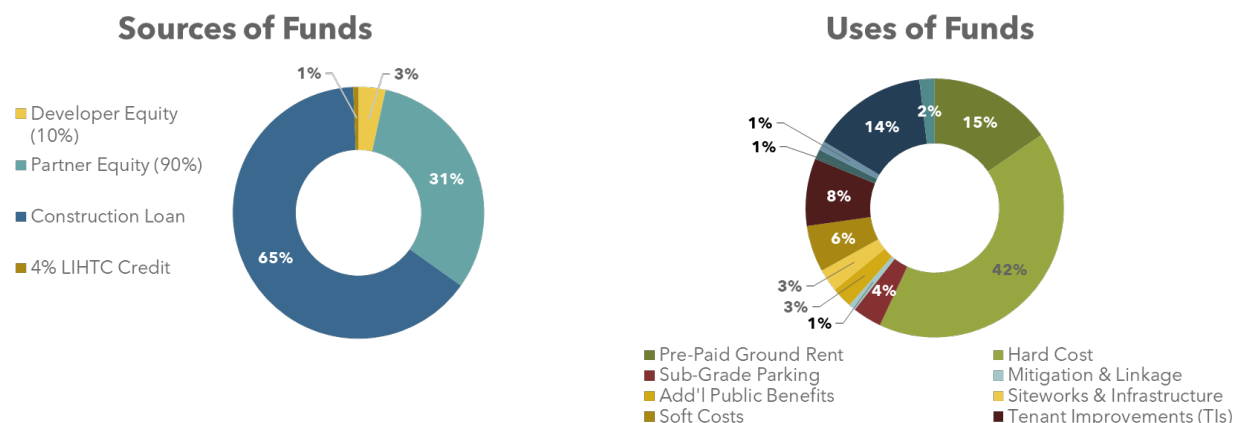


Figure 11: Sources and Uses of Funds

#### f) Impact of the Proposed Hypothesis with Greener Financing

In order for this thesis to demonstrate the impact of the proposed hypothesis, the financing strategy has been adjusted and different scenarios modelled to showcase the hypothesis could have if implemented.

Several adjustments have been made to Team AFD’s proposed financing in order to reflect current market conditions and to apply a more simple but effective manner to demonstrate the outcomes of the hypothesis. These adjustments include:

- using SOFR (which is at 3.80% as of mid-December 2022) rather than LIBOR however the 300 basis point spread was maintained;
- development costs applied at an average nominal blended rate for simplicity (see Appendix);
- a base case waterfall distribution that is structured in the following order:
  1. An 8% return on a pari-passu based on the invested capital contribution
  2. A return of capital event
  3. A 15% GP promote above the 8% preferred return
  4. 20% GP promote above a 12% return to the LP

These assumptions were then adjusted in three different scenarios to demonstrate the impact on returns. The three scenarios tested were:

- Scenario 1: *Preferred Equity Terms* - The Limited Partner provided preferential equity rates on the basis of the ESG benefits such that the final promote hurdle was reduced by 100 bps
- Scenario 2: *Preferred Debt Terms* - The spread on top of SOFR was reduced by 100 basis points on the basis that debt lenders could be negotiated to provide better debt terms on the same premise
- Scenario 3: *Hybrid* - A combination of the Scenario 1 and Scenario 2

It is noted that 100 bps was selected as a nominal amount for the differential in terms of the preferential rates. This was taken for illustration purposes for the hypothesis to showcase what the impact of the returns would be. To confirm the extent of the preferential rates provided could be further research would need to be conducted.

The outcomes on the returns are shown in Table 4.

Table 4: Modelled Returns on Different Scenarios

<b>Internal Rate of Return (IRR)</b>	<b>Base Case</b>	<b>Scenario 1: Pref Equity Terms</b>	<b>Scenario 2: Pref Debt Terms</b>	<b>Scenario 3: Pref Equity + Debt Terms</b>
GP	18.66%	19.01%	19.42%	19.76%
LP	14.48%	14.43%	14.92%	14.87%
<b>Equity Multiple (EM)</b>	<b>Base</b>	<b>Pref Equity</b>	<b>Pref Debt</b>	<b>Pref Equity + Debt</b>
GP	3.19 x	3.26 x	3.33 x	3.40 x
LP	2.48 x	2.47 x	2.54 x	2.53 x

The cashflows and waterfall model have been included as an Appendix.

### g) Discussion

It can be observed in Table 4 that there are movements in the returns for a GP and LP on the basis of these adjusted assumptions. As expected for Scenario 1 with the preferential equity terms with adjustments in the hurdle rate, the returns (in terms of both the IRR and EM) for the GP increases while the LP decreases. This is because as adjusting the hurdle rate in the waterfall distribution amends the share of profits such that the GP has a higher chance of earning promote. This in effect a zero-sum game where the GP earns a higher promote with the distributions flowing more to the GP and therefore less to the LP. However, this case study potentially represents the degree of which an ESG investor or impact investor may be willing to sacrifice some of their returns in order to invest into this project to achieve the environmental benefits in meeting their broader less financial objectives. In this case the decrease in the LP's returns are not drastically significant (5 basis points for the IRR and 1 basis point for the EM) which therefore is considered a realistic option that these types of investors might entertain. While this is not a significant decrease for the LP, there is a material change for the GP as their returns here increase by approximately 50 basis points. This would make it more appealing for GPs or real estate developers to pursue.

In Scenario 2 where debt providers are willing to provide more preferential debt terms then this is one circumstance where both the GP and LP can achieve a higher return. In a broader sense the lender is the entity that is sacrificing their return in order to realize the ESG project within their portfolio. This is a much more attractive scenario from a financial return perspective as the returns increase by approximately 75 basis points for the GP and 45 basis

points for the LP. However, this scenario is considered much more difficult to achieve as per the interview findings as lending institutions are less likely to provide preferential rates on the basis of an ESG outcomes.

Scenario 3, which is the combination of Scenario 1 and Scenario 2, shows the combined effect as a future potential scenario. Although this demonstrates the most attractive financial outcome for the GP, this would face similar challenges to implementation as per Scenario 2.

This thesis considers it much more likely that upon being able to convince ESG investors or impact investors to deploy capital into a TOD project, then Scenario 1 would be more likely as a short to medium term outcome. It is unlikely Scenario 2 would ever exist by itself, but rather, Scenario 3 would be more likely if lending institutions offered preferential debt terms on top of being able to realize Scenario 1.



## 7. Discussion

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### a) Conditions for Success

In order for the proposed hypothesis to succeed there are several key conditions of success that needs to be met.

First there needs to be a willingness of the private financing industry to participate in the process – providers of either equity and debt would need to be willing to sacrifice a proportion of their possible returns in order to provide a cheaper form of financing that can make a TOD more attractive. This willingness to participate is a way in which these providers can demonstrate their commitment to ESG as part of their Corporate Social Responsibility. It is viewed that this is a growing field where they could either improve their reputation and create market share or establish better relationships as this market trend for more sustainable investing is becoming a critical criterion for investments.

Second there needs to be a reliable method behind the quantification process for the environmental benefits – the quantification process needs to be well established and properly measured in order for the results of this to be relied upon by the financiers. One proposal to enhance the quantification process is to establish a “counterfactual” which sits as the base case scenario that the TOD project is compared against. Discrete parameters should be factored into establishing the premise of the counterfactual such as with / without the public transit, the amount of parking provided below the zoning code or comparable benchmark developments, the amount of micro-mobility options, any proposed and sustained incentives or programs for greener commuting behaviors etc.

The intent is to establish a casual effect of the specific parameters that affect the modal shift from single occupancy vehicles onto public transit. It is noted these discrete parameters can apply to a specific real estate asset. For an assessment of a wider precinct scale broader elements within the masterplan scale can also be factored in however for the hypothesis to work this needs to be modelled within the single ownership structure of the proposed development. It would be extremely difficult to attempt to attribute the specific benefits to different real estate assets within a broader precinct that has fragmented ownership in the quantification process. For this reason, this hypothesis proposes that a condition of success the applicable scenarios are either at an individual real estate asset level or a wider precinct scale under a single ownership structure.

Third the reliability of the quantification needs to be trusted by the industry. This needs to be a sustained measurement where the environmental benefits are properly measured such that this can be readily understood by financiers in where and how they should deploy their capital. Having a stronger understanding of the actual extent that their investment or financing will contribute to reducing greenhouse gas emissions.

## b) Limitations and Future Research

It is noted that this thesis contains its limitations as a conceptual exercise. The task in this thesis should be considered an initial first step in the early validation of the hypothesis through interviews along with a hypothetical case study to illustrate the opportunities. It is acknowledged that there are still several large hurdles in implementing the conceptualized hypothesis in practice, and particularly in ensuring the widespread adoption of such practices.

It is suggested that further research be undertaken to better understand the different issues that could facilitate or hinder adoption. Specifically, a test case should be worked through with one of the software providers to prove that measuring the environmental benefits of a TOD can actually be done. It is also suggested that a specific project be piloted once further experimental work has been done with the quantification method. Furthermore, more in-depth interviews should be conducted with ESG investors or impact investors, as well as the range of financial institutions, to identify whether such a proposal would be palatable. It is also important to understand the actual degree of impact this has in terms of the quantum of carbon emissions reduced. For these reasons this thesis strongly suggests further research be conducted in this space.

## c) Future Opportunities

If and when the hypothesis has been established, it is possible there are further opportunities to pursue within the financing of TODs that can help enhance the process. One possibility is the support of public policy to enhance the credit worthiness of a TOD project to provide improved incentives to promote TOD projects. While a swathe of existing public policies exists around TODs, there may be some value in considering a national level wide policy to provide, for example, tax credits that rely upon the environmental benefits of the TOD project which can be transferrable or in off-set to other projects.

Another area that can also be explored further is the linkage between the value that's generated and how this can flow back to the original cost of the implementation. From a broader public perspective this can trace the link from the financial and social cost from the public infrastructure and how this additional value sourced in the cheaper financing can flow back to contributing back to the original costs incurred. In theory with a higher value associated with a TOD project then the real estate developers can share more of the value that they generate through existing value capture mechanisms. This clearer compensation process can help enhance the implementation if there is a clear commitment and indication of where and how the value will be shared. This process of tying back the social value with its social cost is another area that can be explored further to better enhance a TOD project by demonstrating the value chain.

## 8. Conclusion

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This thesis has attempted to propose and illustrate a hypothesis on establishing a pathway for TODs to source cheaper capital through leveraging their environmental benefits. While primarily a qualitative process and still emerging, the findings demonstrate that there is potential in the hypothesis being realized to allow real estate developers that implement TOD projects to negotiate preferential rates or preferential terms. Through the case study outlined in Section 6 this thesis has attempted to showcase the potential financial impact that the hypothesis can have and how this can strongly incentivize the private sector to implement more TOD projects. It is considered that with a stronger interest across the industry to implement TODs, and by enabling real estate developers to source capital at more attractive rates, there will be more interest that will drive a higher quality product for TODs. The increased interest can also drive higher competition that can both open pathways to innovation or facilitate stronger collaboration with the transit service to more strongly facilitate the modal shift.

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## Appendix – Development Cost Assumptions

<b>Hypothetical Case Study - Fort Point</b>					
<b>Costs</b>					
<i>Program</i>	GFA	Efficiency	NLA	Blended All In Costs (psqft)	Total Development Cost
Office	624,610	90%	562,149	\$ 700	\$ 437,227,000
Life-Sciences	822,036	95%	780,934	\$ 850	\$ 698,730,600
Hotel	347,493	70%	243,245	\$ 650	\$ 225,870,450
Condos	421,514	78%	328,781	\$ 800	\$ 337,211,200
Retail	45,000	75%	33,750	\$ 220	\$ 9,900,000
Arts Museum	63,750		-		\$ 60,000,000
Performing Arts Venue	36,000	75%	27,000		\$ 10,000,000
Multifamily	544,388	78%	424,623	\$ 450	\$ 244,974,600
Community Arts Hall	6,000		-		\$ 3,000,000
Multi-Family - Affordable/Artist Studios	190,000	78%	148,200	\$ 450	\$ 85,500,000
<b>Total</b>	<b>3,100,791</b>		<b>2,548,682</b>		<b>\$ 2,112,413,850</b>



## Appendix – Hypothetical Case Study Waterfall Models

### Project Cashflows

Cashflow	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total Development Costs	(135,157,999)	(197,022,559)	(240,506,508)	(616,353,309)	(285,646,911)	(370,252,686)	(218,593,253)	(48,880,626)	0	0	0
Property Cashflows (NOI)	0	0	0	0	0	0	27,064,104	54,128,207	108,256,414	108,256,414	129,340,442
Sale Proceeds	0	0	0	785,232,250	0	0	0	0	0	0	2,396,257,542
Property level cashflow	(135,157,999)	(197,022,559)	(240,506,508)	168,878,942	(285,646,911)	(370,252,686)	(191,529,149)	5,247,581	108,256,414	108,256,414	2,525,597,984
Unlevered IRR	12.50%										
EM	2.02 x										
<b>Debt Calculation</b>											
Equity	47,305,300	68,957,896	84,177,278	215,723,658	99,976,419	129,588,440	76,507,639	17,108,219	0	0	0
Invested Equity (Cumulative)	47,305,300	116,263,195	200,440,473	416,164,131	516,140,550	645,728,990	722,236,628	739,344,848	739,344,848	739,344,848	739,344,848
Beginning Debt Balance	0	90,839,691	229,435,652	406,681,700	63,354,864	259,646,284	526,149,061	681,779,619	713,552,026	713,552,026	713,552,026
Debt Draws	87,852,699	128,064,663	156,329,230	400,629,651	185,670,492	240,664,246	142,085,614	31,772,407	0	0	0
Interest Payable	2,986,992	10,531,298	20,916,818	41,275,764	10,620,927	25,838,532	40,609,047	47,441,276	48,521,538	48,521,538	48,521,538
Debt Service	0	0	0	0	0	0	27,064,104	47,441,276	48,521,538	48,521,538	48,521,538
Interest Accrued	2,986,992	10,531,298	20,916,818	41,275,764	10,620,927	25,838,532	13,544,943	0	0	0	0
Debt Paydown	0	0	0	(785,232,250)	0	0	0	0	0	0	(713,552,026)
Ending Debt Balance	90,839,691	229,435,652	406,681,700	63,354,864	259,646,284	526,149,061	681,779,619	713,552,026	713,552,026	713,552,026	0
SOFR (15 December 2022)	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%
Spread	300 bps	300 bps	300 bps	300 bps	300 bps	300 bps	300 bps	300 bps	300 bps	300 bps	300 bps
<b>Project Levered Returns</b>											
Equity Funding	(47,305,300)	(68,957,896)	(84,177,278)	(215,723,658)	(99,976,419)	(129,588,440)	(76,507,639)	(17,108,219)	0	0	0
Property level cashflow after debt service	0	0	0	0	0	0	0	6,686,931	59,734,877	59,734,877	80,818,904
Distribution After Debt Payback	0	0	0	0	0	0	0	0	0	0	1,682,705,516
Levered Cashflow	(47,305,300)	(68,957,896)	(84,177,278)	(215,723,658)	(99,976,419)	(129,588,440)	(76,507,639)	(10,421,288)	59,734,877	59,734,877	1,763,524,420
Unlevered IRR	15.04%										
EM	2.39 x										

### Base Case DCF

GP Contribution	10%	\$ 73,934,485		
LP Contribution	90%	\$ 665,410,362.75		
		GP	LP	IRR
Preferred Return		10.0%	90.0%	8%
Hurdle 2		15%	85.0%	12.0%
Hurdle 3		20%	80.0%	

RED.THG – Thesis

Waterfall		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Hurdle 1 &amp; Return of Capital</b>												
<b>GP Equity Account</b>												
Beginning Balance		0	4,730,530	12,004,762	21,382,871	44,665,866	58,236,777	75,854,563	89,573,692	98,450,410	100,352,955	102,407,704
Preferred Return Accrued		0	378,442	960,381	1,710,630	3,573,269	4,658,942	6,068,365	7,165,895	7,876,033	8,028,236	8,192,616
Additional Contribution		4,730,530	6,895,790	8,417,728	21,572,366	9,997,642	12,958,844	7,650,764	1,710,822	0	0	0
Return of Capital		0	0	0	0	0	0	0	0	5,973,488	5,973,488	110,600,320
Ending Balance		4,730,530	12,004,762	21,382,871	44,665,866	58,236,777	75,854,563	89,573,692	98,450,410	100,352,955	102,407,704	0
IRR Check	8.00%	(4,730,530)	(6,895,790)	(8,417,728)	(21,572,366)	(9,997,642)	(12,958,844)	(7,650,764)	(1,710,822)	5,973,488	5,973,488	110,600,320
<b>LP Equity Account</b>												
Beginning Balance			42,574,770	108,042,857	192,445,836	401,992,795	524,130,995	682,691,071	806,163,232	886,053,687	903,176,593	921,669,332
Preferred Return Accrued		0	3,405,982	8,643,429	15,395,667	32,159,424	41,930,480	54,615,286	64,493,059	70,884,295	72,254,127	73,733,547
Additional Contribution		42,574,770	62,062,106	75,759,550	194,151,292	89,978,777	116,629,596	68,856,875	15,397,397	0	0	0
Return of Capital		0	0	0	0	0	0	0	0	53,761,389	53,761,389	995,402,878
Ending Balance		42,574,770	108,042,857	192,445,836	401,992,795	524,130,995	682,691,071	806,163,232	886,053,687	903,176,593	921,669,332	0
IRR Check	8.00%	(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	53,761,389	53,761,389	995,402,878
<b>Remaining Capital for Promote Distribution</b>												
<b>Hurdle 2</b>												
Additional Return to LP to Reach Hurdle 2												310,878,237
IRR Check	12.00%	(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	53,761,389	53,761,389	1,306,281,116
GP Return												54,860,865
Remaining Cashflow For Hurdle 3												291,782,120
<b>Hurdle 3</b>												
GP Hurdle 3 Distribution												58,356,424
LP Hurdle 3 Distribution												233,425,696
GP Cashflow		(4,730,530)	(6,895,790)	(8,417,728)	(21,572,366)	(9,997,642)	(12,958,844)	(7,650,764)	(1,710,822)	5,973,488	5,973,488	223,817,609
IRR	18.66%											
EM	3.19 x											
LP Cashflow		(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	53,761,389	53,761,389	1,539,706,811
IRR	14.48%											
EM	2.48 x											

**Scenario 1: Preferred Equity Rates**

It is noted here that the hurdle 2 has reduced by 100 basis points compared with the base case

	GP	LP	IRR
Preferred Return	10.0%	90.0%	8%
Hurdle 2	15%	85.0%	11.0%
Hurdle 3	20%	80.0%	

Waterfall		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Hurdle 1 &amp; Return of Capital</b>												
GP Equity Account												
Beginning Balance		0	4,730,530	12,004,762	21,382,871	44,665,866	58,236,777	75,854,563	89,573,692	98,450,410	100,352,955	102,407,704
Preferred Return Accrued		0	378,442	960,381	1,710,630	3,573,269	4,658,942	6,068,365	7,165,895	7,876,033	8,028,236	8,192,616
Additional Contribution		4,730,530	6,895,790	8,417,728	21,572,366	9,997,642	12,958,844	7,650,764	1,710,822	0	0	0
Return of Capital		0	0	0	0	0	0	0	0	5,973,488	5,973,488	110,600,320
Ending Balance		4,730,530	12,004,762	21,382,871	44,665,866	58,236,777	75,854,563	89,573,692	98,450,410	100,352,955	102,407,704	0
IRR Check	8.00%	(4,730,530)	(6,895,790)	(8,417,728)	(21,572,366)	(9,997,642)	(12,958,844)	(7,650,764)	(1,710,822)	5,973,488	5,973,488	110,600,320
LP Equity Account												
Beginning Balance			42,574,770	108,042,857	192,445,836	401,992,795	524,130,995	682,691,071	806,163,232	886,053,687	903,176,593	921,669,332
Preferred Return Accrued		0	3,405,982	8,643,429	15,395,667	32,159,424	41,930,480	54,615,286	64,493,059	70,884,295	72,254,127	73,733,547
Additional Contribution		42,574,770	62,062,106	75,759,550	194,151,292	89,978,777	116,629,596	68,856,875	15,397,397	0	0	0
Return of Capital		0	0	0	0	0	0	0	0	53,761,389	53,761,389	995,402,878
Ending Balance		42,574,770	108,042,857	192,445,836	401,992,795	524,130,995	682,691,071	806,163,232	886,053,687	903,176,593	921,669,332	0
IRR Check	8.00%	(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	53,761,389	53,761,389	995,402,878
Remaining Capital for Promote Distribution												
Hurdle 2												
Additional Return to LP to Reach Hurdle 2												224,995,988
IRR Check	10.98%	(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	53,761,389	53,761,389	1,220,398,866
GP Return												
Remaining Cashflow For Hurdle 3												
Hurdle 3												
GP Hurdle 3 Distribution												78,564,012
LP Hurdle 3 Distribution												314,256,048
GP Cashflow		(4,730,530)	(6,895,790)	(8,417,728)	(21,572,366)	(9,997,642)	(12,958,844)	(7,650,764)	(1,710,822)	5,973,488	5,973,488	228,869,506
IRR	19.01%											
EM	3.26 x											
LP Cashflow		(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	53,761,389	53,761,389	1,534,654,914
IRR	14.43%											
EM	2.47 x											

**Scenario 2: Preferred Debt Rates**

It is noted here that the spread on top of SOFR has reduced by 100 basis points compared with the base case

Project level cashflow

Cashflow		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total Development Costs		(135,157,999)	(197,022,559)	(240,506,508)	(616,353,309)	(285,646,911)	(370,252,686)	(218,593,253)	(48,880,626)	0	0	0
Property Cashflows (NOI)		0	0	0	0	0	0	27,064,104	54,128,207	108,256,414	108,256,414	129,340,442
Sale Proceeds		0	0	0	785,232,250	0	0	0	0	0	0	2,396,257,542
Property level cashflow		(135,157,999)	(197,022,559)	(240,506,508)	168,878,942	(285,646,911)	(370,252,686)	(191,529,149)	5,247,581	108,256,414	108,256,414	2,525,597,984
Unlevered IRR	12.50%											
EM	2.02 x											
<b>Debt Calculation</b>												
Equity		47,305,300	68,957,896	84,177,278	215,723,658	99,976,419	129,588,440	76,507,639	17,108,219	0	0	0
Invested Equity (Cumulative)		47,305,300	116,263,195	200,440,473	416,164,131	516,140,550	645,728,990	722,236,628	739,344,848	739,344,848	739,344,848	739,344,848
Beginning Debt Balance		0	90,400,428	227,422,191	401,475,456	51,776,692	245,834,677	507,736,597	656,327,313	688,099,720	688,099,720	688,099,720
Debt Draws		87,852,699	128,064,663	156,329,230	400,629,651	185,670,492	240,664,246	142,085,614	31,772,407	0	0	0
Interest Payable		2,547,728	8,957,100	17,724,035	34,903,836	8,387,492	21,237,674	33,569,205	38,988,384	39,909,784	39,909,784	39,909,784
Debt Service		0	0	0	0	0	0	27,064,104	38,988,384	39,909,784	39,909,784	39,909,784
Interest Accrued		2,547,728	8,957,100	17,724,035	34,903,836	8,387,492	21,237,674	6,505,102	0	0	0	0
Debt Paydown		0	0	0	(785,232,250)	0	0	0	0	0	0	(688,099,720)
Ending Debt Balance		90,400,428	227,422,191	401,475,456	51,776,692	245,834,677	507,736,597	656,327,313	688,099,720	688,099,720	688,099,720	0
SOFR (15 December 2022)		3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%	3.80%
Spread		200 bps	200 bps	200 bps	200 bps	200 bps	200 bps	200 bps	200 bps	200 bps	200 bps	200 bps
<b>Project Levered Returns</b>												
Equity Funding		(47,305,300)	(68,957,896)	(84,177,278)	(215,723,658)	(99,976,419)	(129,588,440)	(76,507,639)	(17,108,219)	0	0	0
Property level cashflow after debt service		0	0	0	0	0	0	0	15,139,823	68,346,631	68,346,631	89,430,658
Distribution After Debt Payback		0	0	0	0	0	0	0	0	0	0	1,708,157,822
Levered Cashflow		(47,305,300)	(68,957,896)	(84,177,278)	(215,723,658)	(99,976,419)	(129,588,440)	(76,507,639)	(1,968,396)	68,346,631	68,346,631	1,797,588,480
Unlevered IRR	15.62%											
EM	2.43 x											

RED.THG – Thesis

Waterfall		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Hurdle 1 &amp; Return of Capital</b>												
GP Equity Account												
Beginning Balance		0	4,730,530	12,004,762	21,382,871	44,665,866	58,236,777	75,854,563	89,573,692	98,450,410	99,491,779	100,616,459
Preferred Return Accrued		0	378,442	960,381	1,710,630	3,573,269	4,658,942	6,068,365	7,165,895	7,876,033	7,959,342	8,049,317
Additional Contribution		4,730,530	6,895,790	8,417,728	21,572,366	9,997,642	12,958,844	7,650,764	1,710,822	0	0	0
Return of Capital		0	0	0	0	0	0	0	0	6,834,663	6,834,663	108,665,775
Ending Balance		4,730,530	12,004,762	21,382,871	44,665,866	58,236,777	75,854,563	89,573,692	98,450,410	99,491,779	100,616,459	0
IRR Check	8.00%	(4,730,530)	(6,895,790)	(8,417,728)	(21,572,366)	(9,997,642)	(12,958,844)	(7,650,764)	(1,710,822)	6,834,663	6,834,663	108,665,775
LP Equity Account												
Beginning Balance			42,574,770	108,042,857	192,445,836	401,992,795	524,130,995	682,691,071	806,163,232	886,053,687	895,426,015	905,548,128
Preferred Return Accrued		0	3,405,982	8,643,429	15,395,667	32,159,424	41,930,480	54,615,286	64,493,059	70,884,295	71,634,081	72,443,850
Additional Contribution		42,574,770	62,062,106	75,759,550	194,151,292	89,978,777	116,629,596	68,856,875	15,397,397	0	0	0
Return of Capital		0	0	0	0	0	0	0	0	61,511,968	61,511,968	977,991,979
Ending Balance		42,574,770	108,042,857	192,445,836	401,992,795	524,130,995	682,691,071	806,163,232	886,053,687	895,426,015	905,548,128	0
IRR Check	8.00%	(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	61,511,968	61,511,968	977,991,979
Remaining Capital for Promote Distribution												710,930,726
<b>Hurdle 2</b>												
Additional Return to LP to Reach Hurdle 2												310,878,237
IRR Check	12.01%	(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	61,511,968	61,511,968	1,288,870,216
GP Return												54,860,865
Remaining Cashflow For Hurdle 3												345,191,623
<b>Hurdle 3</b>												
GP Hurdle 3 Distribution												69,038,325
LP Hurdle 3 Distribution												276,153,299
GP Cashflow		(4,730,530)	(6,895,790)	(8,417,728)	(21,572,366)	(9,997,642)	(12,958,844)	(7,650,764)	(1,710,822)	6,834,663	6,834,663	232,564,965
IRR	19.42%											
EM	3.33 x											
LP Cashflow		(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	61,511,968	61,511,968	1,565,023,515
IRR	14.92%											
EM	2.54 x											

**Scenario 3: Hybrid Scenario**

Here both the assumption of the adjusted hurdle rate (as per Scenario 1) and the reduced spread (as per Scenario 2) are both held and modelled.

Waterfall		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Hurdle 1 &amp; Return of Capital</b>												
GP Equity Account												
Beginning Balance		0	4,730,530	12,004,762	21,382,871	44,665,866	58,236,777	75,854,563	89,573,692	98,450,410	99,491,779	100,616,459
Preferred Return Accrued		0	378,442	960,381	1,710,630	3,573,269	4,658,942	6,068,365	7,165,895	7,876,033	7,959,342	8,049,317
Additional Contribution		4,730,530	6,895,790	8,417,728	21,572,366	9,997,642	12,958,844	7,650,764	1,710,822	0	0	0
Return of Capital		0	0	0	0	0	0	0	0	6,834,663	6,834,663	108,665,775
Ending Balance		4,730,530	12,004,762	21,382,871	44,665,866	58,236,777	75,854,563	89,573,692	98,450,410	99,491,779	100,616,459	0
IRR Check	8.00%	(4,730,530)	(6,895,790)	(8,417,728)	(21,572,366)	(9,997,642)	(12,958,844)	(7,650,764)	(1,710,822)	6,834,663	6,834,663	108,665,775
LP Equity Account												
Beginning Balance			42,574,770	108,042,857	192,445,836	401,992,795	524,130,995	682,691,071	806,163,232	886,053,687	895,426,015	905,548,128
Preferred Return Accrued		0	3,405,982	8,643,429	15,395,667	32,159,424	41,930,480	54,615,286	64,493,059	70,884,295	71,634,081	72,443,850
Additional Contribution		42,574,770	62,062,106	75,759,550	194,151,292	89,978,777	116,629,596	68,856,875	15,397,397	0	0	0
Return of Capital		0	0	0	0	0	0	0	0	61,511,968	61,511,968	977,991,979
Ending Balance		42,574,770	108,042,857	192,445,836	401,992,795	524,130,995	682,691,071	806,163,232	886,053,687	895,426,015	905,548,128	0
IRR Check	8.00%	(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	61,511,968	61,511,968	977,991,979
Remaining Capital for Promote Distribution												
												710,930,726
<b>Hurdle 2</b>												
Additional Return to LP to Reach Hurdle 2												224,995,988
IRR Check	10.99%	(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	61,511,968	61,511,968	1,202,987,967
GP Return												
												39,705,174
Remaining Cashflow For Hurdle 3												
												446,229,564
<b>Hurdle 3</b>												
GP Hurdle 3 Distribution												89,245,913
LP Hurdle 3 Distribution												356,983,651
GP Cashflow		(4,730,530)	(6,895,790)	(8,417,728)	(21,572,366)	(9,997,642)	(12,958,844)	(7,650,764)	(1,710,822)	6,834,663	6,834,663	237,616,863
IRR	19.76%											
EM	3.40 x											
LP Cashflow		(42,574,770)	(62,062,106)	(75,759,550)	(194,151,292)	(89,978,777)	(116,629,596)	(68,856,875)	(15,397,397)	61,511,968	61,511,968	1,559,971,618
IRR	14.87%											
EM	2.53 x											

## Appendix - Team AFD Submission

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# ARTPOINT



**Transforming Fort Point into ArtPoint -  
a new cultural heart for the arts and  
creative industry.**

**AFD**

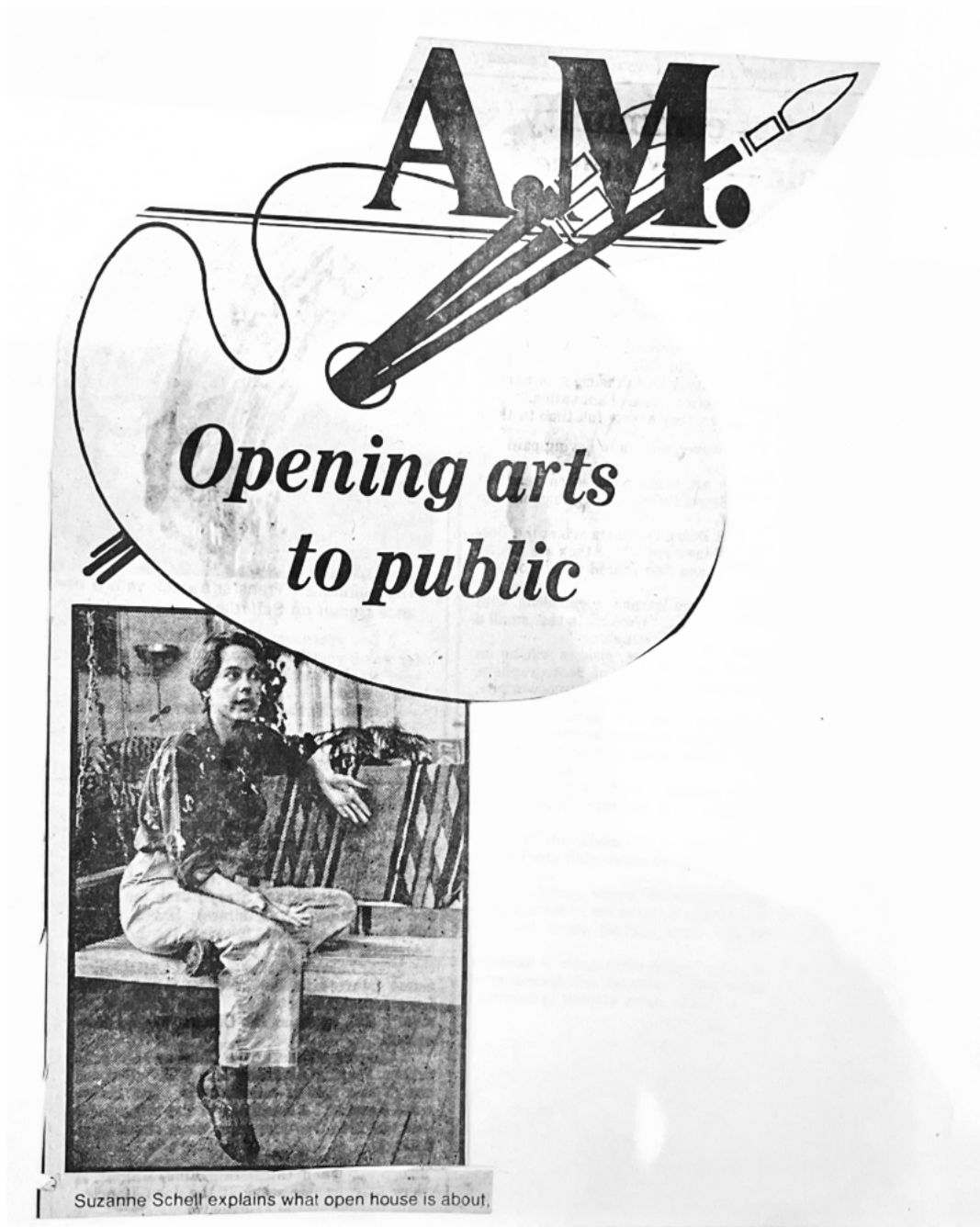
Team 1 - Steven La, Ashley Katz, Tamar Ofer, Himanshu Tiwari, Miguel Dávila Uzcátegui

May 2022



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# Executive Summary

ArtPoint

# Executive Summary

## Vision Statement

Transforming Fort Point into ArtPoint - a new cultural heart for the arts and creative industry by engaging artistic, educational and commercial neighbors through excellent design, practices and programs.

## Site Selection

AFD has selected sites A2 and A3 as we believe these are the two sites with the greatest potential to deliver the vision for ArtPoint. These two sites will transform the existing USPS training ground into a vibrant and connected arts precinct.

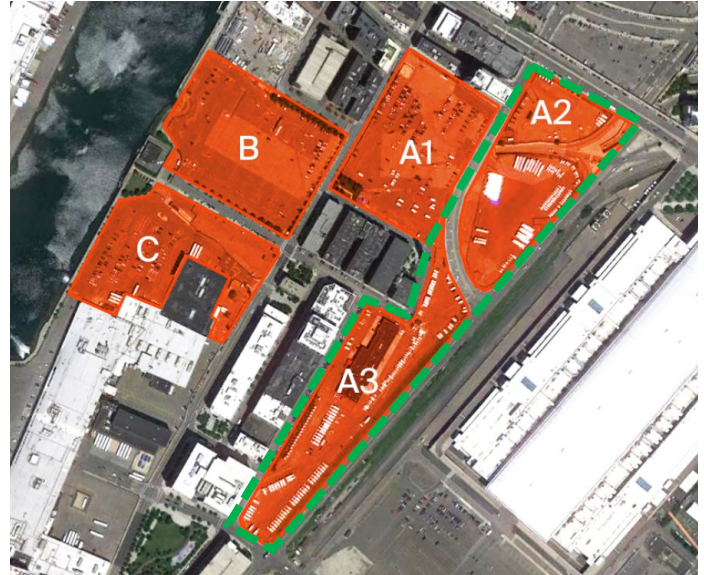
## Permitting Plan

AFD's proposal requires an amendment to PDA No.69 for additional FAR and building heights. This is justified on the basis of exceptional public benefits including a newly proposed transit hub to service Fort Point, the BCEC and Seaport.

## Financials

AFD offers to Massport for the development rights for sites A2 and A3:

- **\$721 m** in ground rent
- **\$75m** to fund a new transit station to serve ArtPoint, the BCEC and wider Seaport
- **\$16.9m** for the construction of an arts museum & performing arts venue



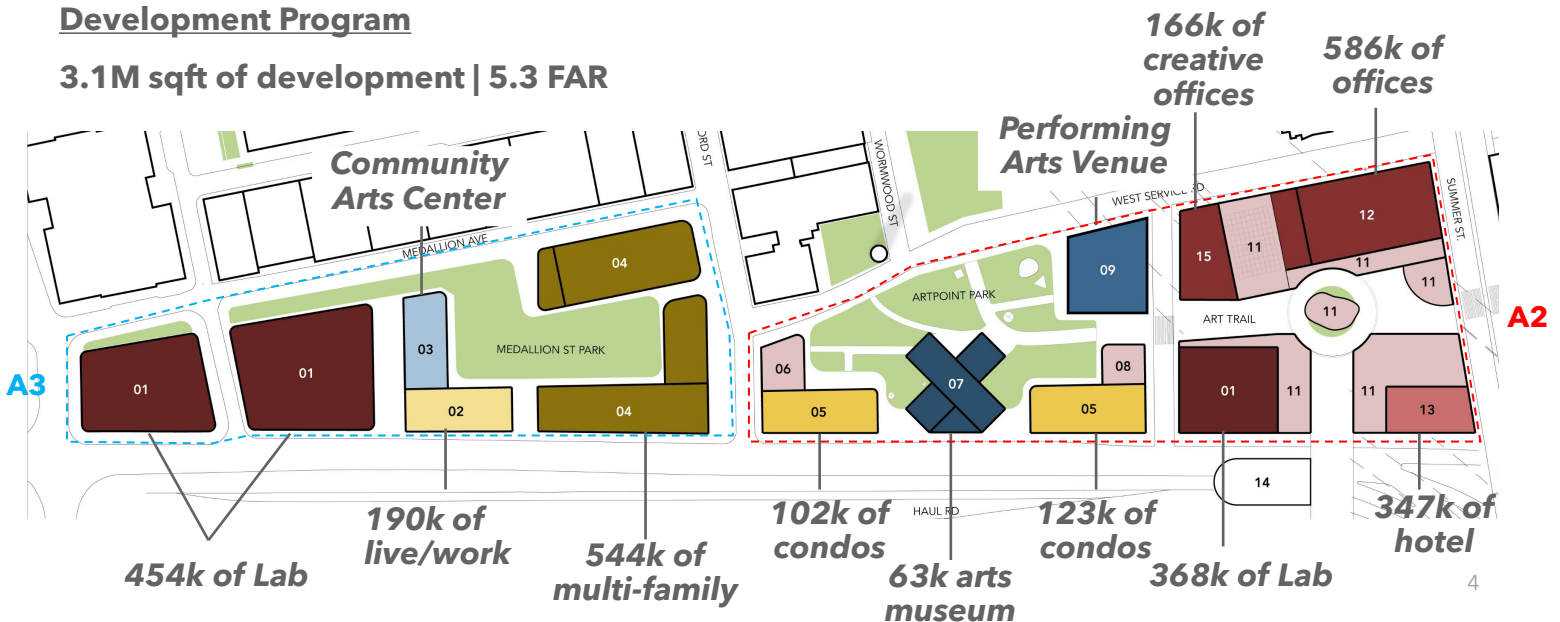
## Diversity and Inclusion

AFD's proposed development is designed to deliver tangible progress towards diversity and inclusion through:

- An in-house team comprised of 80% of color and 40% female
- Partnership with HMFH (a WBE) as our architect of record & RSE Associates (a MBE) for engineering services
- Turner Construction and Janey Construction Management (MBW) for construction
- FPAC for strategic guidance and management of the artists live work studios

## Development Program

**3.1M sqft of development | 5.3 FAR**



# ArtPoint

## a new cultural heart for the arts and creative industry

### Financial Benefits

An unbeatable financial offer

- **\$721M** of ground rent
- **\$75M** to fund new transit
- **\$16.9M** for an arts museum & performing arts venue
- **\$26.66M** in linkage payments
- Ongoing public art fund

### Development Program

A diverse mix of uses fit for Fort Point with a strong focus on housing

- **26.5%** life sciences
- **20.1%** offices
- **37.3%** residential
- **20%** affordable housing
- **11.2%** hotel
- **4.9%** other

### Ability to Finance

Strong financial depth

- Strong balance sheet and credit financing vehicles
- 65% LTV
- LOIs received from credit worthy tenants / partners
- Strategic JV partner (LP)

### Ability to Execute

An experienced and local development team

- Combined 40 years of experience
- Expertise in the arts
- Strong relationships with the City of Boston
- Experienced infrastructure personnel

### Design Excellence

A new destination for the arts

- ArtPark - a new locus for the arts centered around a new arts museum and performing arts venue
- Connectivity - connecting the future planned open space in the 100 acres master plan with Seaport Harbor way

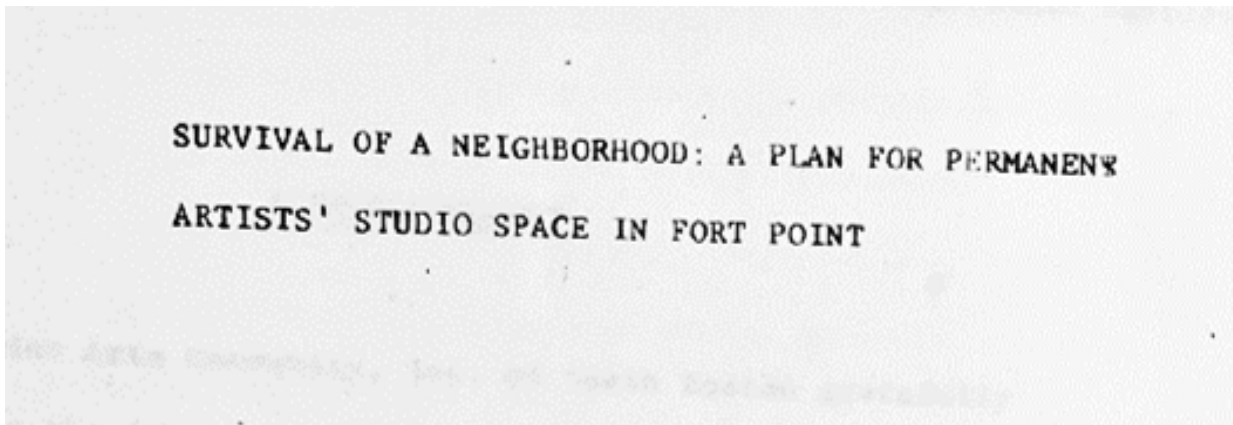
### Diversity and Inclusion

Diversity, equity and inclusion at the heart of everything we do

- An in-house team comprised of 80% of color and 40% female
- Partnerships with HMFH (a WBE), RSE Associates (a MBE) and Janey Construction Management (MBW)

***“The vitality of the arts community will directly affect the development of this city”***

- “Survival of a Neighborhood” Fort Point Arts Community (1984)



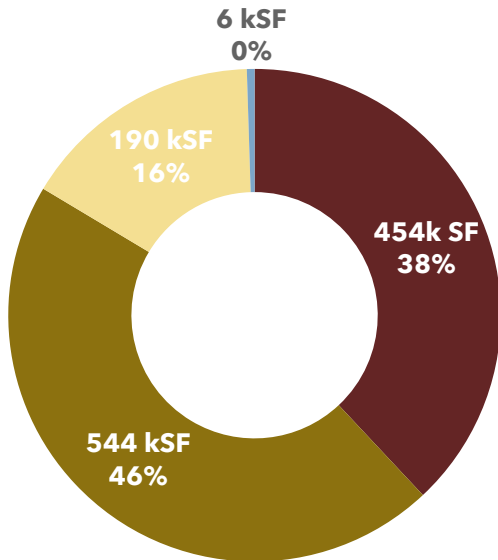
# Development Program

ArtPoint

# Proposed Mix of Uses

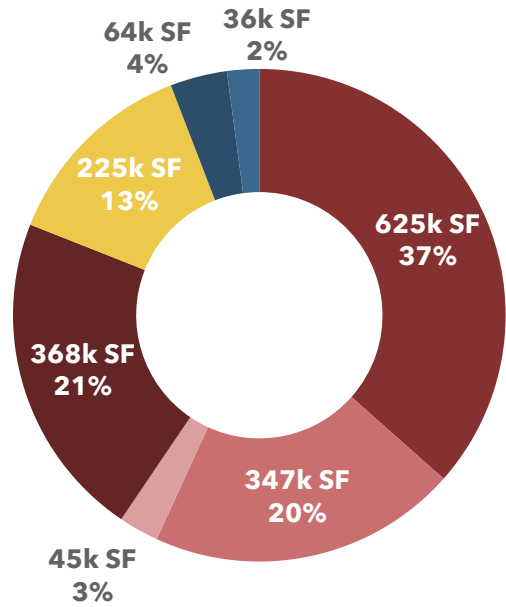


## A3 Program



- Life Sciences
- Multifamily
- Artist Live/Work and Affordable
- Community Arts Center

## A2 Program



- Office
- Retail
- Condo
- Performing Arts Venue
- Hotel
- Life Sciences
- Arts Museum

# Total Development Program

Program	GFA	Percentage	Units	Parking
<b>Multifamily</b>	544,388	17.6%	566	226
<b>Condo</b>	421,514	13.6%	438	329
<b>Artist Live Work and Affordable</b>	110,000	6.1%	122	49
<b>Life Sciences</b>	822,036	26.5%	-	469
<b>Office</b>	624,610	20.1%	-	169
<b>Hotel</b>	347,493	11.2%	486	97
<b>Retail</b>	45,000	1.5%	-	-
<b>Arts Museum</b>	63,750	2.1%	-	-
<b>Performing Arts Venue</b>	36,000	1.2%	1000 seats	-
<b>Community Arts Center</b>	6,000	0.2%	-	-
<b>TOTAL</b>	<b>3,100,791</b>	<b>100%</b>		<b>1339</b>

Our proposal has a diverse mix of uses that will transform Fort Point into one of the most creative, economically vibrant and culturally rich neighborhoods in Boston. There is a strong focus on building a core live-work-play community which fits into the historic fabric of Fort Point. We have proposed:

- a total of **1.44M sqft of commercial office space** to serve the growing demand for office and lab space within the Seaport district
- a total of **965k sqft of residential uses** which includes **20% affordable housing**
- **122 units of artist live/work units** which will help FPAC achieve their goal of providing an addition 250 units in the next ten years
- a new **63k sqft arts museum** as the centerpiece to ArtPark which pays homage to the Institute of Contemporary Art through a symbolic vista along Seaport’s Harbor Way
- a new **36k sqft performing arts venue** with 1000 seating capacity for events to complement the BCEC
- a new **6k sqft community arts center** provided rent-free for community use
- **2.54 acres of public green space** that ties into the 100 acres master plan

Supporting our proposed development program is a newly proposed transit hub that will serve ArtPoint, the Boston Convention and Exhibition Center and the wider South Boston Waterfront Innovation / Seaport District. We have therefore attempted to minimize the extent of parking with a proposed lower parking ratio to be applied for each asset in establishing a more transit-oriented community that totals to 1389 parking spots in aggregate.

## Public Benefits



- **\$75M** contribution to a new transit hub
- **\$92M** for on-site infrastructure and improvements



- **A new 63,000** sqft arts museum
- **A new 16,000** sqft performing arts venue & **6,000** sqft community arts center



- **20% affordable housing** across all residential assets
- A singular **100% affordable artists live/ work building** with 122 units
- Creative studios with dedicated **rent-free space** for artists



- **\$22.5M in linkage payments** for the creation of affordable housing & **\$4.1M** for workforce training
- Commitment to **partnering with MBE & WBEs** such as HMF, RSE Associates & Janey



- **2.54 acres** of new public open space
- New ArtWalk & Avenue of the Arts
- Ongoing fund for public art



# Market Conditions

## Life Sciences - A booming market

Boston is currently in the midst of a booming life sciences market which is driving a significant amount of development for laboratory space. There was nearly 1.9 million sqft of positive net absorption recorded in Q4 2021 with Seaport as a strong cluster that arguably can rival that of Kendall Square. With further short-term cap rate compression expected as a result of the low vacancies we have proposed **822,036 sqft of lab space with flexible uses.**

We intend to capitalize on the market cycles to ride the current booming life sciences market as one of the first phases of our project. This will help generate cashflow revenues that be transferred to support the new transit hub, infrastructure improvements, a new arts museum etc.

We are extremely cognizant of the market's cyclical nature and anticipate cap rate expansions in the medium to long term and therefore have diversified our program mix with life sciences only amounting to 26.5% of our overall development program.

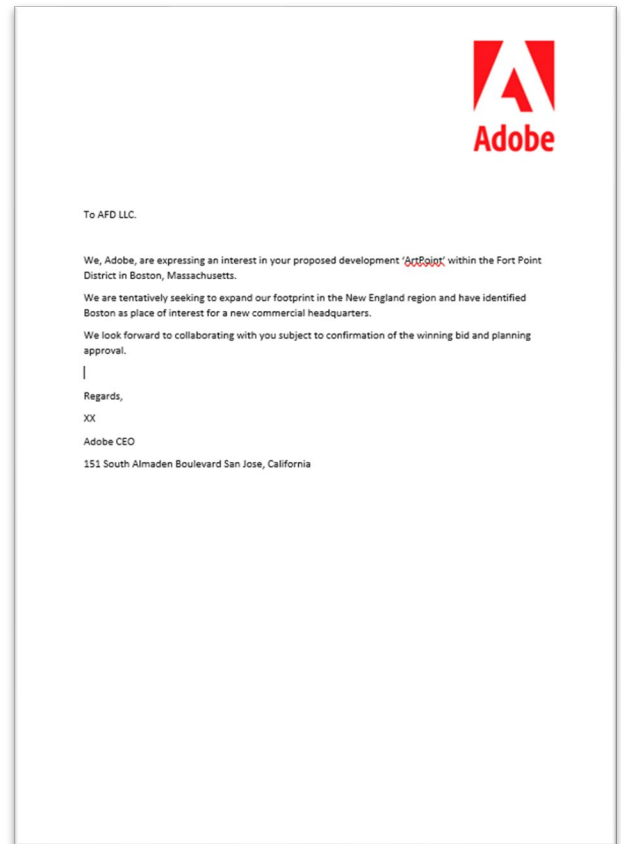
## Commercial - An uncertain market with opportunities

The commercial office space is currently experiencing the wake from the Covid-19 pandemic with high uncertainty in the market. We anticipate with sufficient time there will be an ability for the office market to evolve and to adapt to (1) the hybrid working style (2) flexible working arrangements (3) offices as a collaboration space. As such we have proposed a **signature single office** tower as part of our proposed development **with 624,610 sqft of space.**

Fitting into the creative industry we will be targeting tenants that fit into the identity of ArtPoint to build on the vibrancy of the community. To this extent we have been in discussions with major credit worthy tenants such as Adobe and Autodesk and in particular we have secured a **Letter of Intent from Adobe.**

In addition we will seek to engage with existing tenants within the Fort Point area and offer the opportunity to move into a new Class A office space such as designLAB architects, Studio Troika, Stantec etc.

Rent Trends in Boston Metro Lab, Q4 - 2021



# Market Conditions

## Residential - Addressing housing affordability

The specific residential sub-market in the South Boston region has exhibited a consistently strong demand. There has been consistent absorption which has been reflected by the low vacancies of approximately 4.1% in the past 12 months. In the context of Boston’s housing affordability crisis and Mayor Wu’s desire to manage this we have proposed a strong focus on developing residential assets to help derive additional supply onto the market. We propose to develop **965k sqft of residential of which 20% will be affordable housing**. In addition, there will be affordable artists live work studios.

## Artists Live Work Studios - A long awaited necessity for Fort Point

According to the Boston Planning & Development Agency there are only 148 artists live work studios despite concerted efforts to expand more affordable spaces for artists. This has been a systemic issue since the 1980s with the Boston Wharf Company and has catalyzed into initiatives such as the Artists Live / Work Boston initiative jointly led by the Mayor's Office of Arts and Culture, the BPDA and the Department of Neighborhood Development.

Specifically, the Fort Point Artists Community (FPAC) has announced their intention to create 250 affordable artists live-work spaces within Fort Point over the next ten years. Our proposal is the platform to help facilitate this goal as we are proposing 122 units of affordable artists live work studios within ArtPoint. We have brought this as one of the forefront of our development vision in creating a place for the arts to flourish by creating specifically curated artists living and working spaces. We will work collaboratively with FPAC to establish the most appropriate objectives and placement for these artists live work studios.

## Hotel Demand - Planning for the future

### ▀ Undersupply of rooms in the Boston Convention market compared to other cities within a 0.5 Mile

	Convention Centers	Built Year	(A) Exhibit Space(sqf)	(B) Hotels(Rooms)	=(B)/(A)
SITE	Boston Convention and Exhibition Center	2004	516,000	4,710	0.91%
1	Walter E. Washington Convention Center (Washington D.C)	2003	703,000	8,435	1.20%
2	Music City Center (Nashville, TN)	2013	350,000	5,272	1.51%
3	Pennsylvania Convention Center (Philladelphiha, PA)	1993	679,000	9,194	1.29%
4	San Diego Convention Center (San Diego, CA)	1989	615,700	8,263	1.34%
-	Colorado Convention Center (Denver, CO)	1990	579,000	8,069	1.39%
-	Metro Toronto Convention Centre (Toronto, ON)	1984	391,300	8,487	2.17%

Despite the impact of the Covid-19 pandemic on tourism there is a strong demand for hotels within the area particularly to cater for conventions and events at the BCEC. There is only 4,710 rooms within the South Boston area such that there is a huge reliance on hotels in Back Bay to meet the demand during conventions.

A benchmark study of similar convention centers within North America identified that the BCEC is currently experiencing an undersupply of hotels. Currently the BCEC measures a ratio of 0.91% of hotel rooms to sqft of exhibition space which is below the average of 1.25%. With the future planned expansion of the BCEC at least 500 additional hotel rooms are needed to meet the market demand.

We have therefore proposed **a new hotel with 486 additional rooms** within Site A2 that is **immediately adjacent to the BCEC**.

# Market Conditions

## Civic Space - Curating a cultural district

In addition to the artists live work studios there is a current dearth of cultural and community civic space within Fort Point. A diverse range of spaces are needed to complement and support the largest enclave of artists in New England. Beyond the commercialized convention center run by the Massachusetts Convention Center Authority and a disparate set of galleries spread across Fort Point and Seaport, there is are no local libraries, public institutions or performing arts venues to really provide a shape and identity to Fort Point.



We intend to provide a new cultural heart that is shaped around the historic identity of the arts community. **We will foster this by bringing new civic spaces with a new arts museum, a new community arts center, a performing arts venue, an arts walk and more opportunities for public art.** We intend on highlighting what has been an invisible force and crystalizing this through seeking a Cultural District Designation for ArtPoint with the Mass Cultural Council. We will work with the City of Boston to synergize their intention of the creation of at least three Arts Innovation Districts and identified in the Imagine Boston 2030 plan.

## Retail - A new artistic flair

With the recent developments of the South Boston Waterfront Innovation area there has been an influx of traditional retailing introduced across the Seaport area. Rather there is a higher need for experiential and entertainment retail focused on gathering places, social connections, artist experiences and night time / weekend activation.

We therefore have proposed approximately **45,000 sqft of retail** which stitches the Art Walk with Art Park through a seamless retail experience. For the ground floor of the buildings along the Art Walk we will propose a partnership with WS Development to form a strategic retail working group to curate a cohesive experience along the Seaport Harbor Way. Here there will be a strong mix between convenience F&B to serve the commercial uses during typical business hours, wine bars & breweries to provide social gathering places, a food hall as an anchor F&B attractor, art galleries and exhibition space to enhance the art theme, and pop up markets for both night-time and weekend activation. This will leverage the strong pedestrian foot traffic from both the transit hub and the BCEC. Further down along the new art museum, the creative studios and the performing arts venue this will have a mix of more premium restaurants, art galleries and uses complementary to a pre & post experience following a visit to the museum or attending an event. Further past ArtPark there will be a curated set of high end restaurants in the more serene sections of the district.



Local examples of retail vision

# Public Approvals

We understand that with our development program there will need to be an update to amend the approval of the Master Plan for PDA No. 69. We are seeking to adjust:

- The maximum FAR of the parcels from individual building blocks (U1, U4, U5, U6, U7 and U8) from 3.4 to an aggregate parcel FAR of 5.7 on Site A2 and 4.8 on Site A3.
- The maximum building height in accordance with the Development Plans included in this proposal.
- The position of the open space network in accordance with the revised master plan included in this proposal

We seek the additional density in order to maximize the proposed ground rent on offer to Massport as well as ensure that the additional value created is shared. We intend on channeling this additional value into benefits for the community which includes a new transit hub, the new performance arts venue, a new arts museum, additional public space, affordable housing and artists live work studios.

Key to the success of the proposed revisions to the master plan is the introduction of a new transit stop that will serve ArtPoint, Seaport and the BCEC. This new transit hub will follow Track 61 and have commuter rail services that run to Back Bay as well as South to the Fairmount line. This transit connectivity will enable the higher density development sought after as part of this proposal and as such offer a contribution of \$75m to the reactivation of the line.

To have these changes endorse we will work collaborative with the BPDA on an amendment through an Article Chapter 80 review process.

# Stakeholder Input

We have a strong understanding of the stakeholders that have helped tailor a fitting future for Fort Point. We have actively engaged with several entities listed below to ensure that their voice on the future of Fort Point is strongly heard. We will continue to engage with the spectrum of stakeholders (of which a selection of key stakeholders are identified below) whom are critical to ensure that ArtPoint is a vibrant place that responds to the legacy of Fort Point.



City of Boston  
Landmarks Commission



# ***“The Fort Point Channel Area - a hidden community of 300 visual artists”***

- Jero Nesson, former president of FPAC (1985)



Kathy Chapman

The Fort Point Channel area  
a hidden community  
of 300 visual artists

In association with:



**FORT POINT ARTS COMMUNITY, INC.**  
**OF SOUTH BOSTON**  
249 A STREET  
BOSTON, MASSACHUSETTS 02210  
(617) 423-4299

# **Development Vision**

ArtPoint

## Current Context

### **Boston is lacking a central arts district.**

Fort Point has a history rooted in the arts since 1976. They have been pushing against displacement since the 1980s.

### **The Seaport and Fort Point is a transit desert.**

Despite being prominently located at the doorstep of the BCEC, there aren't convenient ways to access the site. Lack of public transit disproportionately affects people with low incomes and people of color.

### **There is no connection between the 100 Acres and Seaport.**

Summer Street currently acts as a divider between the 100 Acres and Seaport. There is a missing connection that has not been resolved in either masterplans.

### **Fort Point's identity as a den for the vibrant artist community is muted by the built environment.**

Fort Point's rich artist community is marred by the surrounding built environment incl. surface parking lots, a USPS driver training ground and a gentrifying Seaport.

# Context Plan

**Seaport Master Plan**  
(Sasaki - 2017)



**Fort Point 100 Acres Open Space Concept Plan** (Sasaki - 2020)



**ArtPoint Proposal**  
(AFD - 2022)

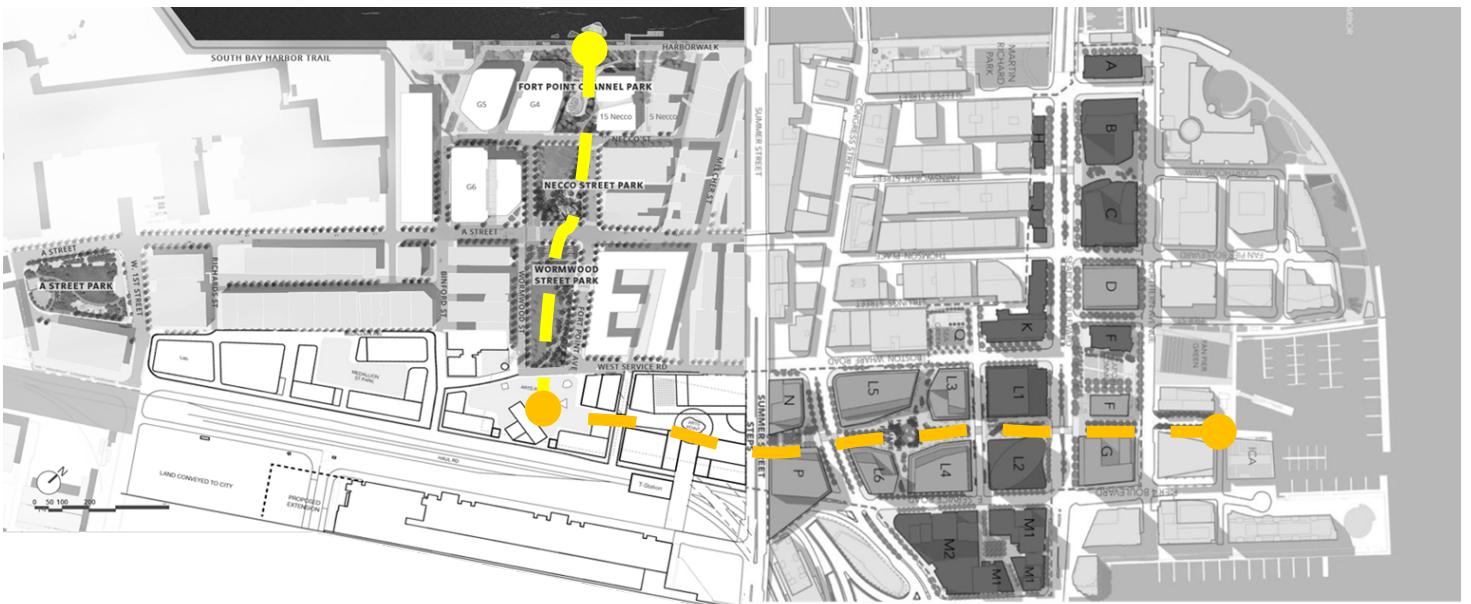
# Contextual Opportunities

We address the issues with the current context through a series of structured and organized moves. This will help transform Fort Point into ArtPoint in a purposeful manner and address each component that will restitch the fabric of Fort Point back into the City of Boston.

1. An extension of Seaport's Harbor Way to connect ArtPoint's new arts museum to the ICA



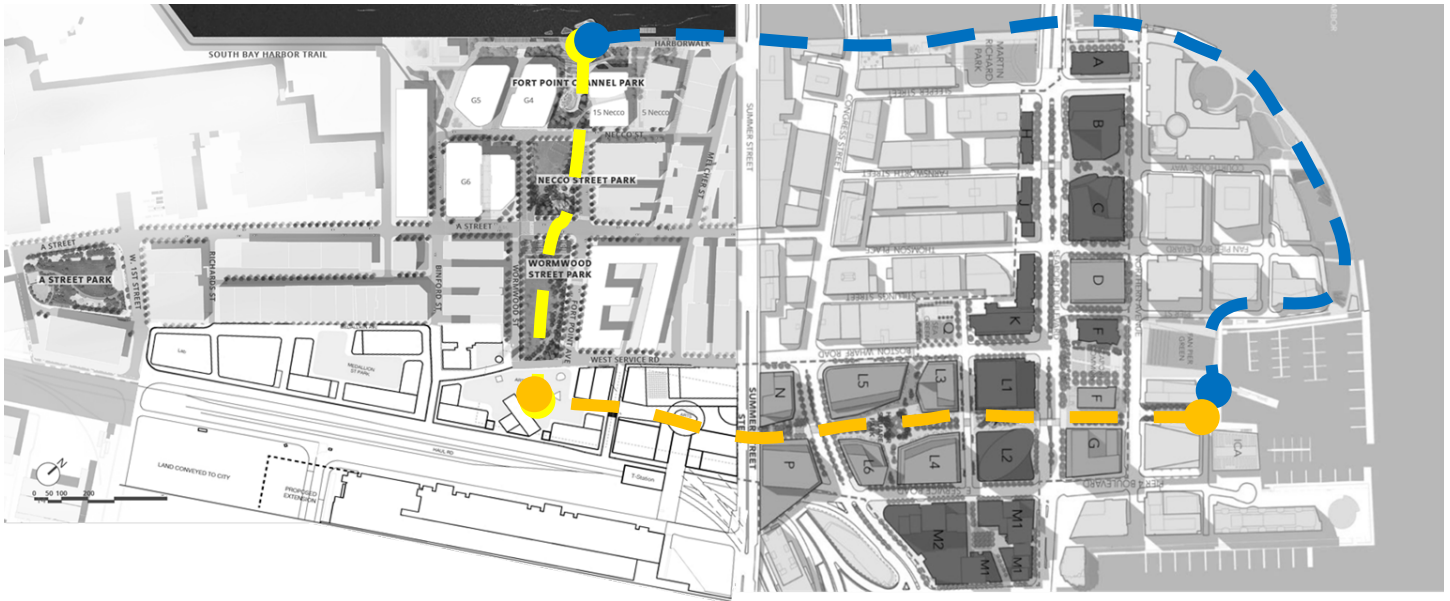
2. Tying into the 100 acres open space plan to enable a pivot from Harbor Way



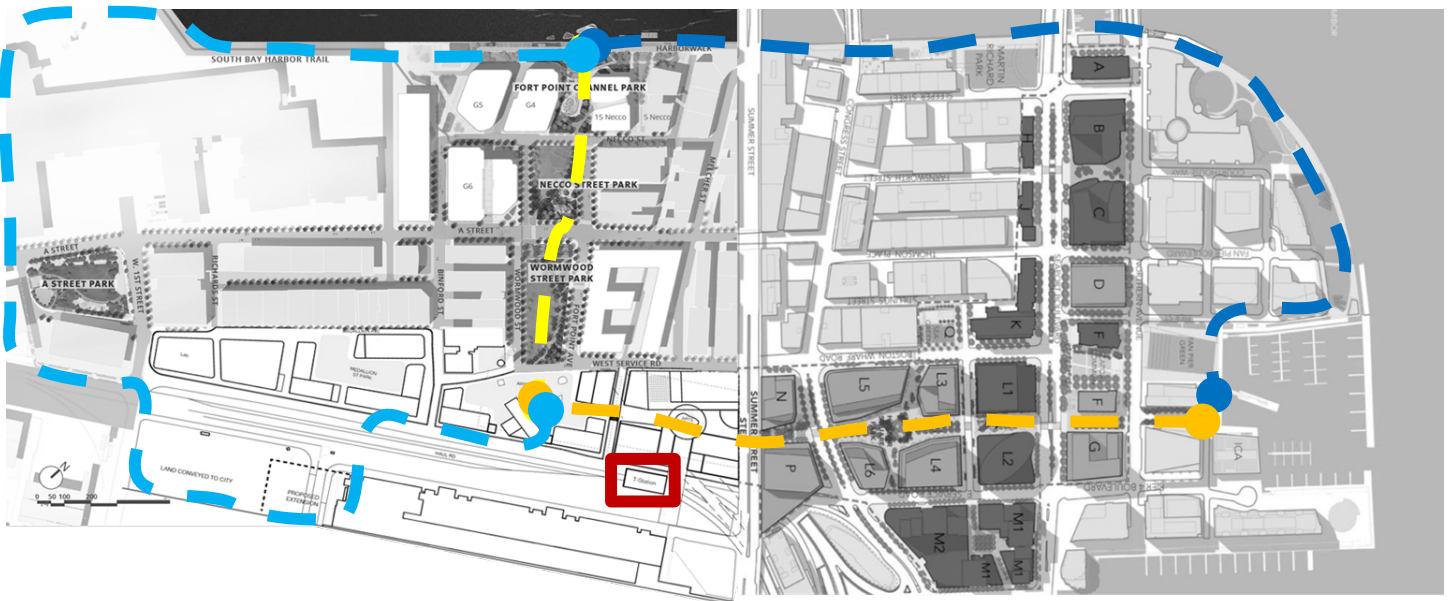


# Contextual Opportunities

3. Completing the frame of the entire Harbor Walk through active and programmed urban realm

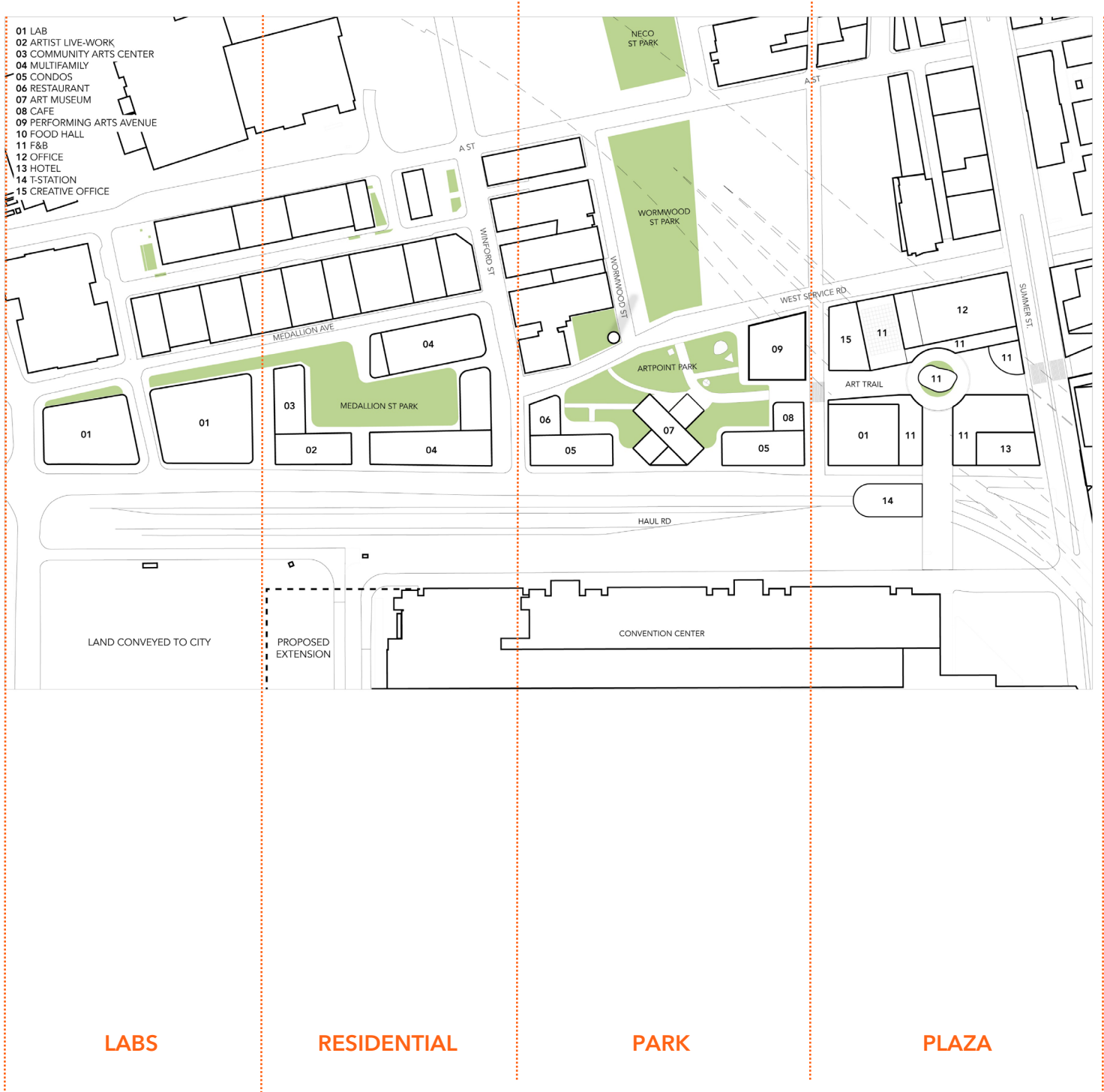


4. Enabling the future development of Gillette and the expansion of the BCEC with Fort Point being a true cultural center that is served by a new transit hub.



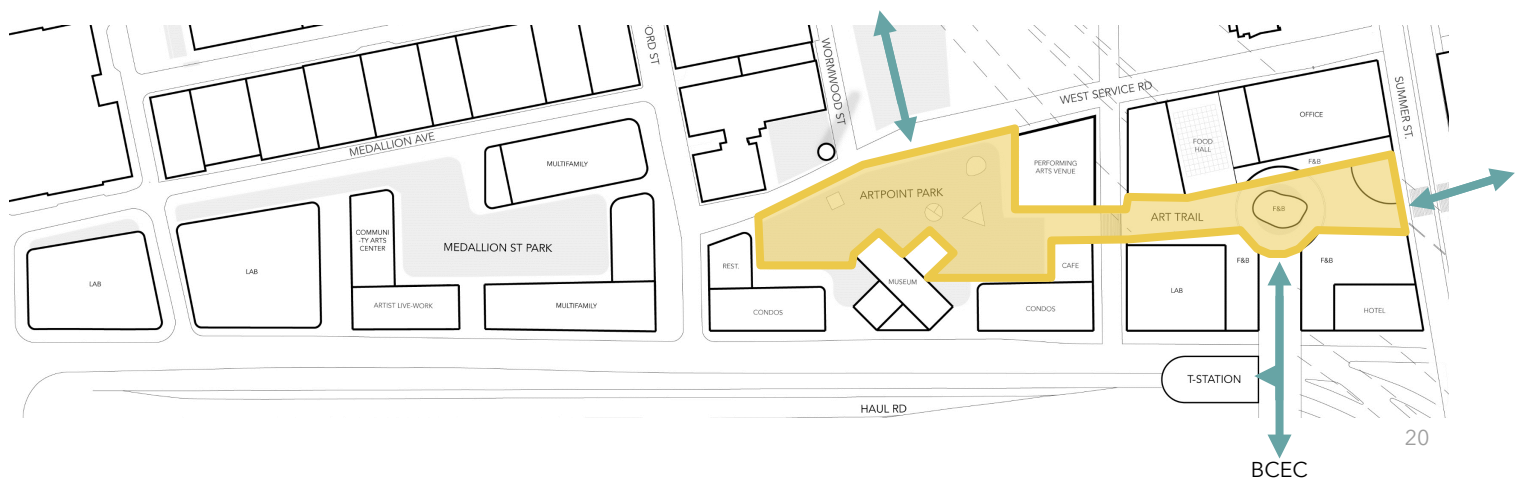
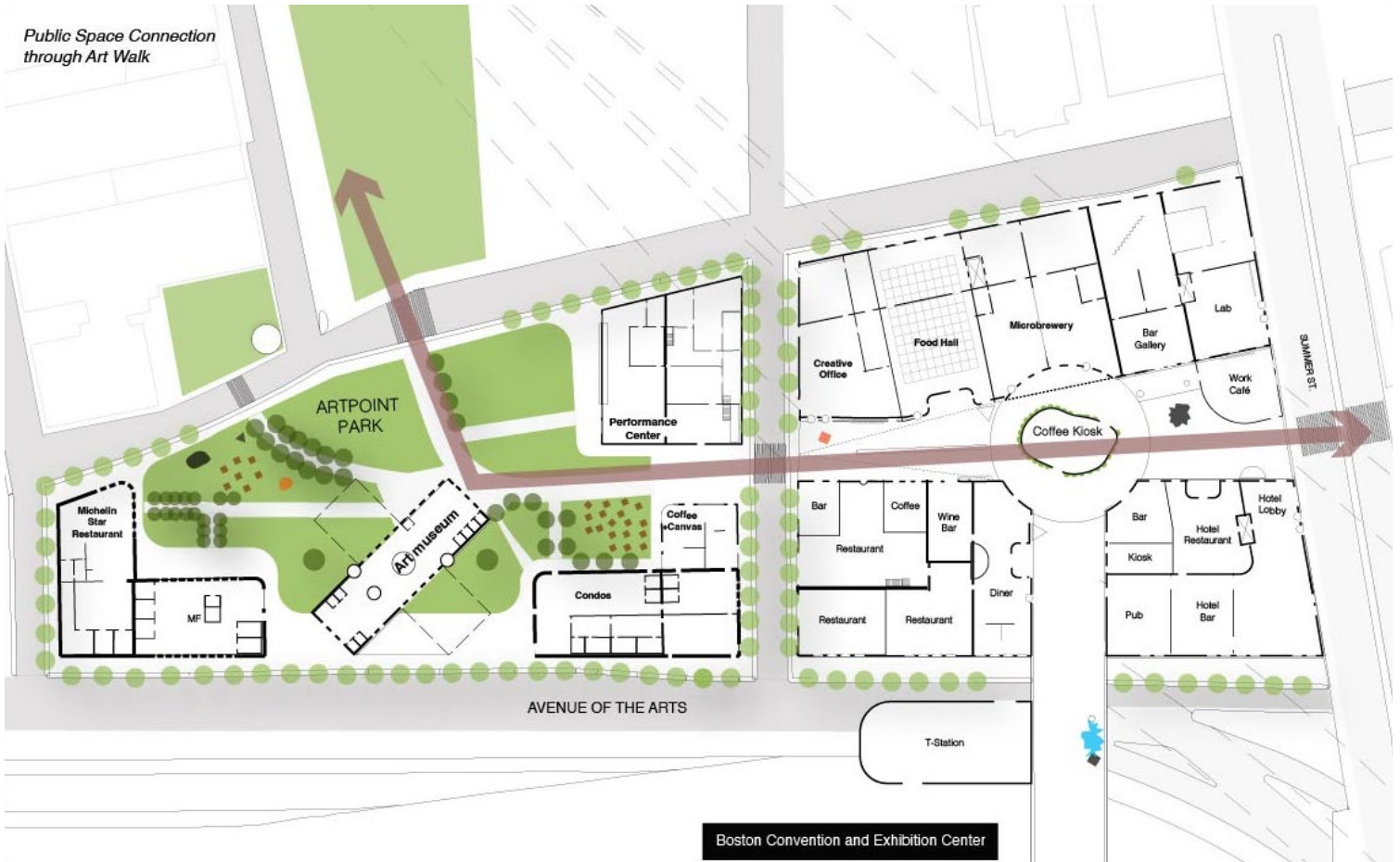
# Masterplan

These moves have culminated into our proposed master plan. Each part of the master plan has its own identity which will be expanded upon section by section through a series of precedence.



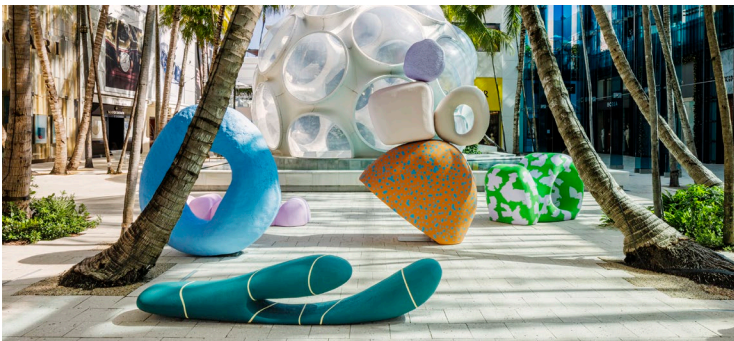
# ArtWalk

## Open Space Plan



# ArtWalk

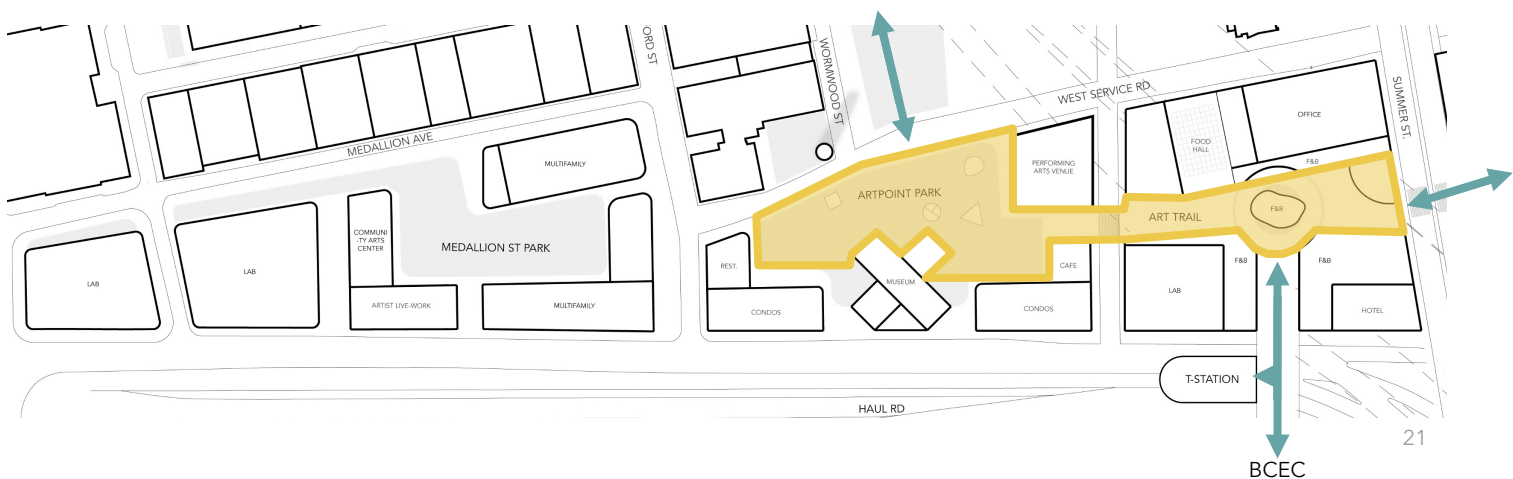
The ArtWalk is a defining feature of ArtPoint which allows the engagement between the community with the artists within the area. A carefully curated movement piece will be designed to continue the Harbor Way from Seaport to have a playful and joyful experience to transition towards the open space within the 100 Acres Master Plan, pivoting at ArtPark. A selection of sculptures, interactive displays and playful landscaping will curate a vibrant experience during all times of days.



Miami Design District  
Miami, FL



Superkilen  
Copenhagen, Denmark



# ArtPoint Plaza

## Typical Upper Floor Plan



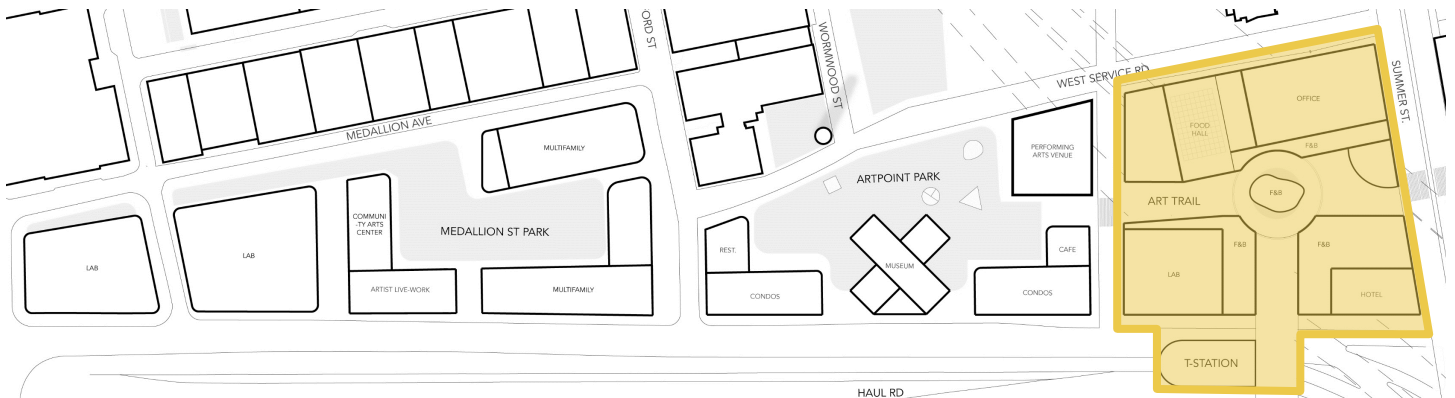
- 04 CREATIVE OFFICES
- 05 ROOF DECK
- 06 OFFICES
- 07 HOTEL
- 08 LAB



# ArtPoint Plaza

## Ground Floor Plan

- 09 FOOD HALL
- 10 MICROBREWERY
- 11 GALLERY BAR  
+ CERAMIC WORKSHOP
- 12 LAB
- 13 CO-WORKING CAFE
- 14 ART HOTEL LOBBY
- 15 ART HOTEL RESTAURANT
- 16 COFFEE + COCKTAIL BAR
- 17 LOBSTER SHACK
- 18 DELICATESSEN
- 19 BAKERY
- 20 DINER
- 21 WINE BAR
- 22 ARTS CAFE
- 23 PUB
- 24 KIOSK
- 25 T-STATION
- 26 ARTS WALK
- 27 ARTS PARK



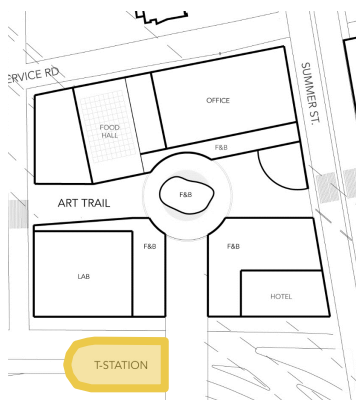
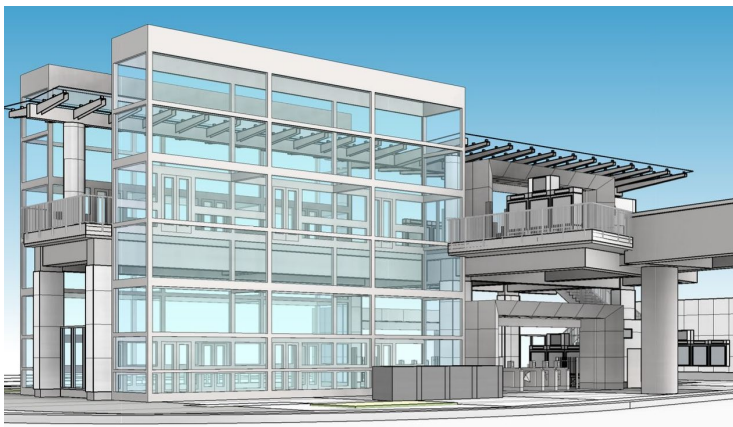
# ArtPoint Transit Center

ArtPoint Transit Center is a new transportation hub that will serve ArtPoint, FortPoint, the BCEC and the wider Seaport. It is located in a central position immediately adjacent to the BCEC and will allow for connections to Back Bay, the Fairmount Line and possible shuttle services to South Station during certain events. It will have an elevated pedestrian concourse which will connect to the entrance of the BCEC at the Summer Street grade on the East and to The Plaza of the Arts on the West. There will be a grand canopy entrance on either side as a state-of-the-art station with curated public art that is reminiscent of the area's historic and prolific freight past as a rail port terminal.

Sydney Metro, Northwest, AUS

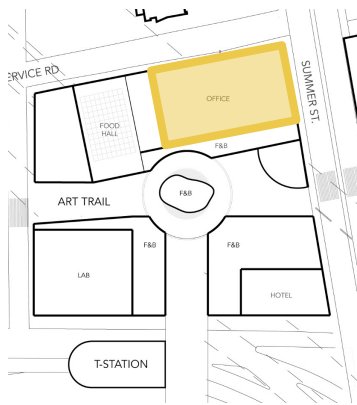


Hope Station, Los Angeles, CA



# Office Building - 458k SF

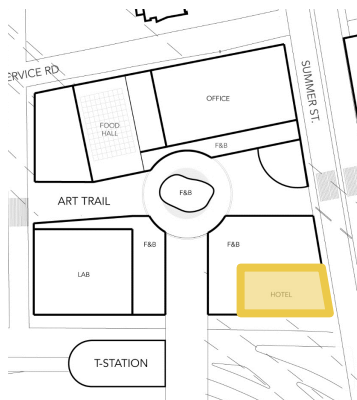
We envisage a signature office tower within our Arts Plaza that will serve an anchor tenant in the creative industry. Credit worth tech tenants in the creative industry such as Adobe or Autodesk are prime leasing targets particularly with their strong influence in digital media and digital arts.



H Queen Arts and Lifestyle Tower  
Hong Kong

# Hotel - 347k SF

We envisage a 5-star hotel that will rival that of the Omni Hotel. This will provide a strong branding opportunity as one of the premium hotels that will service the BCEC upon key events and conventions.



The Albany, LA Convention Center Hotel  
Los Angeles, CA



# Podium Retail - 32k SF

The podium retail within the Plaza of the Arts will synthesis the vibrancy of the arts into a F&B and experiential offering. It will cater for the typical office worker during normal business hours but be an active gathering place for social meetings during the evening or after work events.

We envisage for there to be a mix of convenience retailing, grab and go type F&B, cafes, breweries, wine bars, bakeries, co-working cafes and so forth.

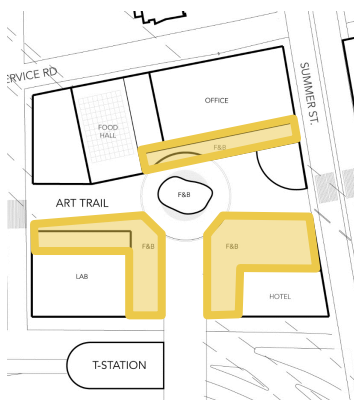
This area will serve both the F&B needs of the BCEC and be a beneficiary of the foot traffic from the pedestrians entering / exiting the transit hub.



New Changing Mixed-Use  
Shanghai, China

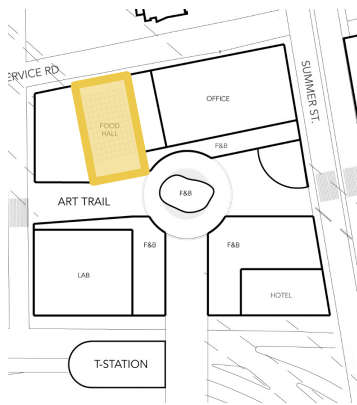


Tokyo Torch Tower  
Tokyo, Japan



# Food Hall - 11k SF

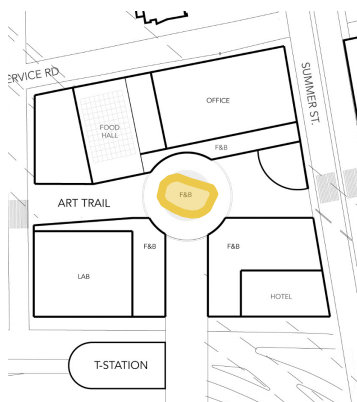
We envision a food hall that acts as a canteen during the day to serve the businesses during working hours but transitions into a social gathering place after work. There will be a diverse selection of F&B retailers to allow casual team lunches and formal business lunches, as well as a social meeting place for colleagues after work. The food hall will complement the events which occur along ArtWalk and have open spaces for casual mingling. The design will accommodate skylights to introduce daylight and a natural



Jacx&Co Food Hall  
Queens, NY

# Sculpted Kiosk - 2k SF

The sculpted kiosk sits in the node of the transit hub connection to the BCEC and the continuation of the Harbor Walk. We envisage this to be a beautiful art piece that expresses its form through structure but still provides a retail function such as a grab and go coffee kiosk. We intend this to add to the vibrancy of the F&B retail while building on the arts theme.



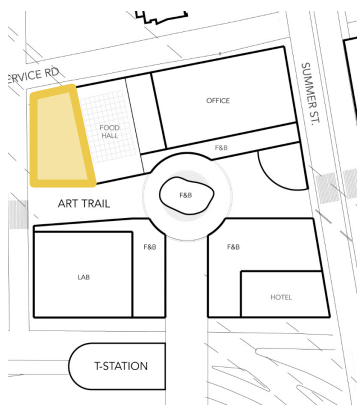
Mizzi Studio  
London Royal Parks, UK

# Creative Office - 166k SF

We intend to create lower-rise creative office space geared towards smaller creative businesses like architecture, interior design, graphic design, web design, marketing, gaming, and fashion companies. We want to create spaces of inspiration, flexibility, and collaboration. The plan will have units with open floor plans for bench-style seating rather than traditional cubicles. These units will have exposed ceilings, upgraded lighting, and concrete flooring throughout.

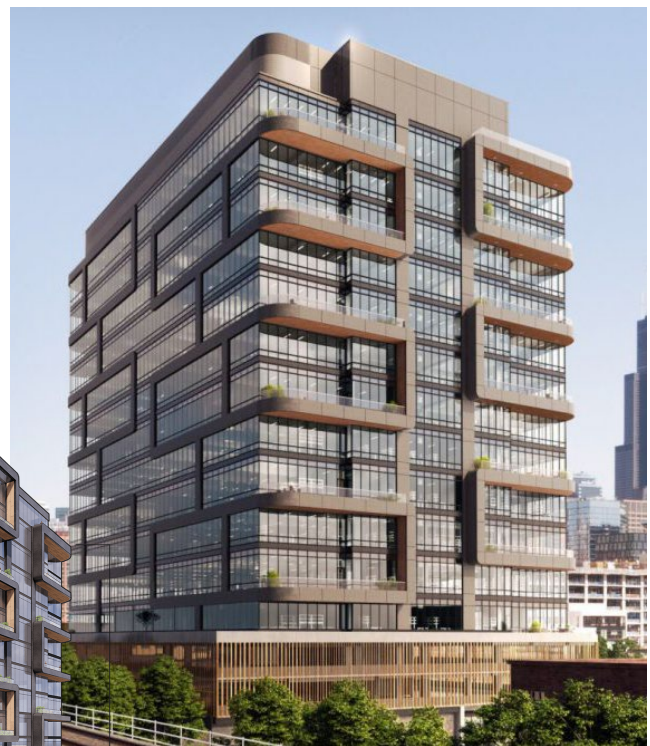


Catalyst Creative Office  
Los Angeles, CA

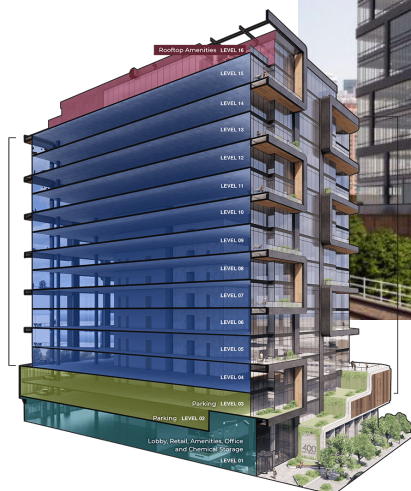
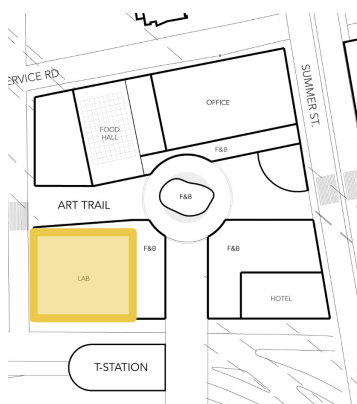


# Lab - 368k SF

We propose a flexible lab building that will act as an extension of the life science buildings being developed on Parcels N and P in the Seaport Master Plan. This will be a 15-story life sciences building and be well connected to the adjacent transit hub.

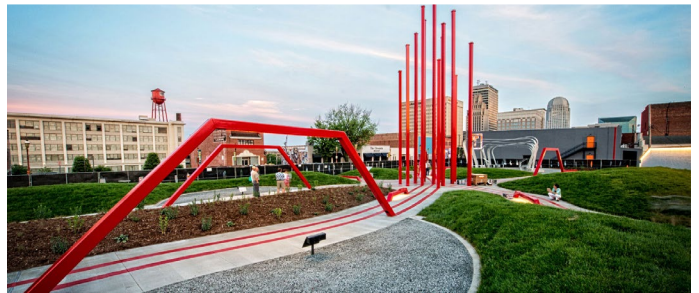


Fulton Labs  
Chicago, IL



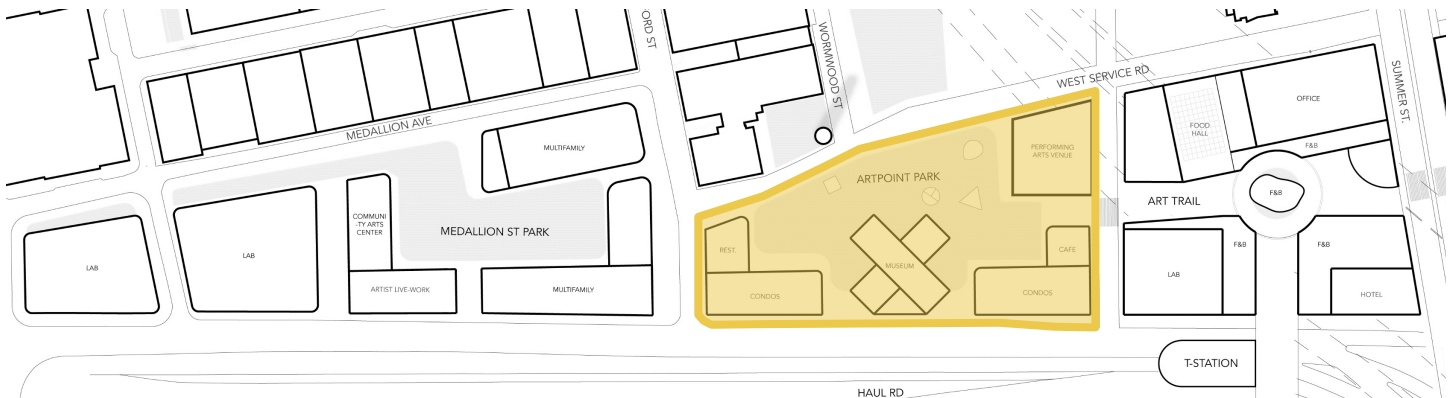
# ArtPoint Park

ArtPoint Park is the central locus of our proposed development that is centered by a new arts museum. This is the main draw at the intersection between Harbor Way and the 100 Acres Master Plan's Linear Park and is symbolic of the renaissance of Fort Point. ArtPoint Park will speak to the historic trails pioneered by the artists community within Fort Point through its active programming in a narrative that will be shared and celebrated to all through its inclusivity, equity and aspiration.



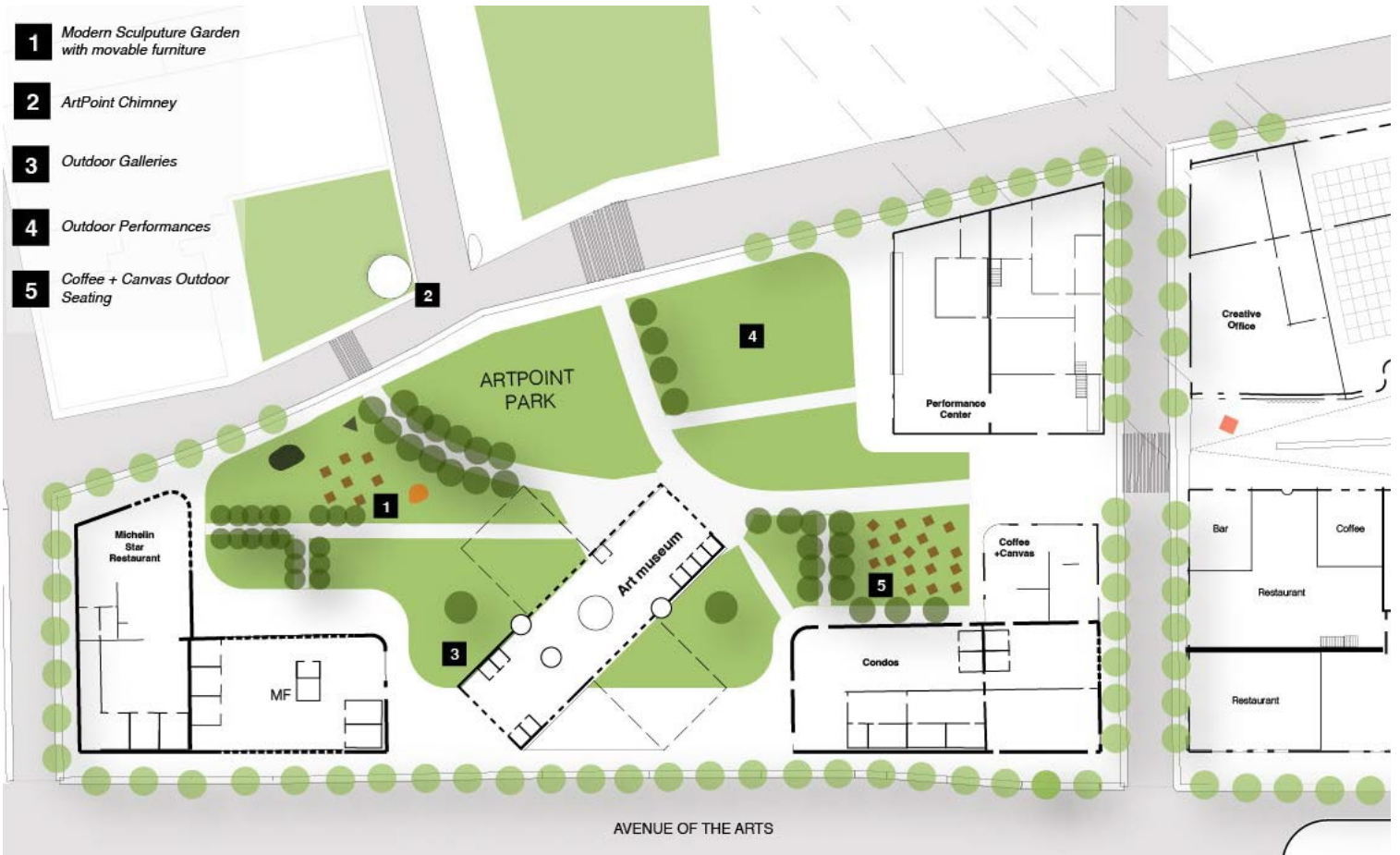
Artpark  
Zagreb, Croatia

ARTivity on the Green  
Winston-Salem, NC



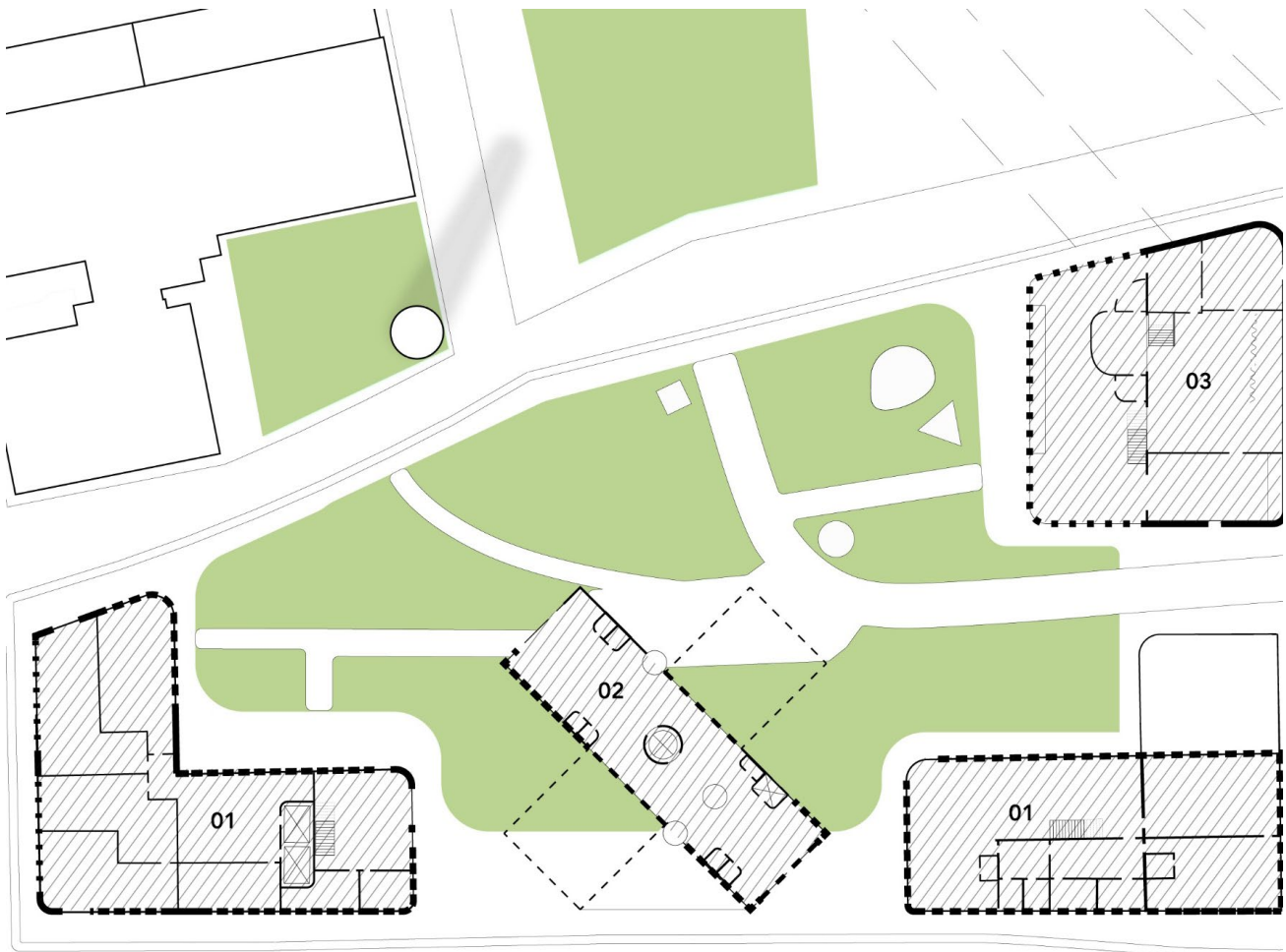
# ArtPoint Park

## Open Space Plan



# ArtPoint Park

## Typical Floor Plan



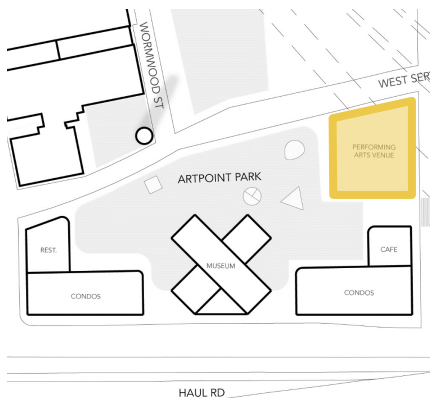
# Performing Arts Venue - 36k SF



The performing arts venue will be a new home for emergent and established artists in theater, dance, music, chamber opera, film, and media from Boston and around the globe. With a prominent location on the ArtPoint Park across from the Arts museum, the performing arts venue will be a defining cultural center in Fort Point and Boston. It will serve as a cultural destination and attraction for those visiting ArtPoint. It will also host local artistic endeavors serving the immediate community.



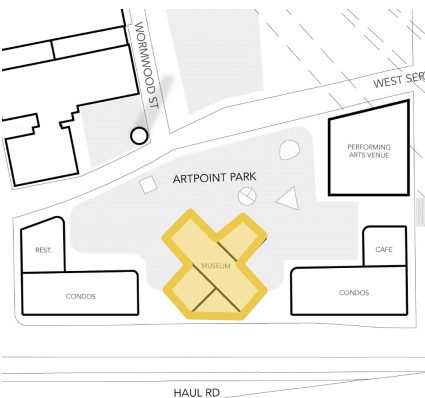
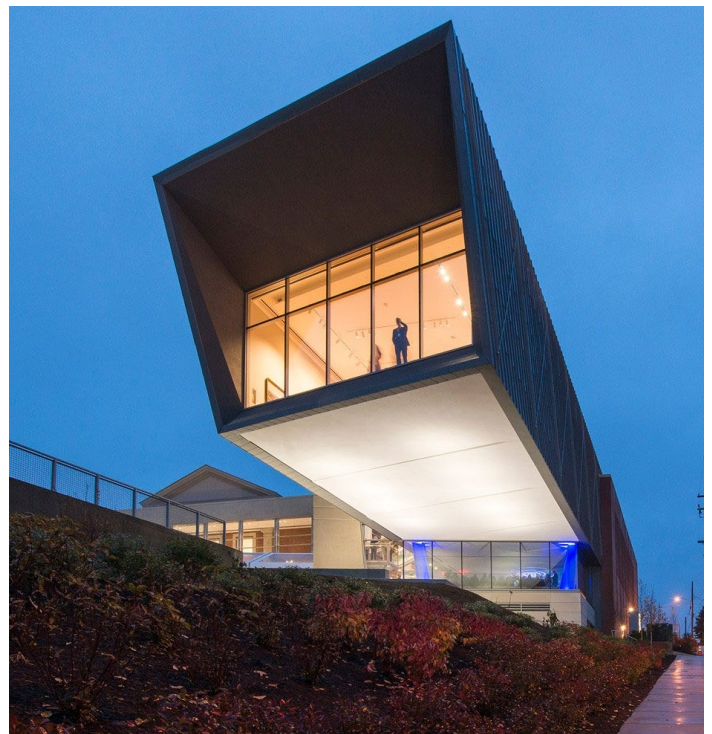
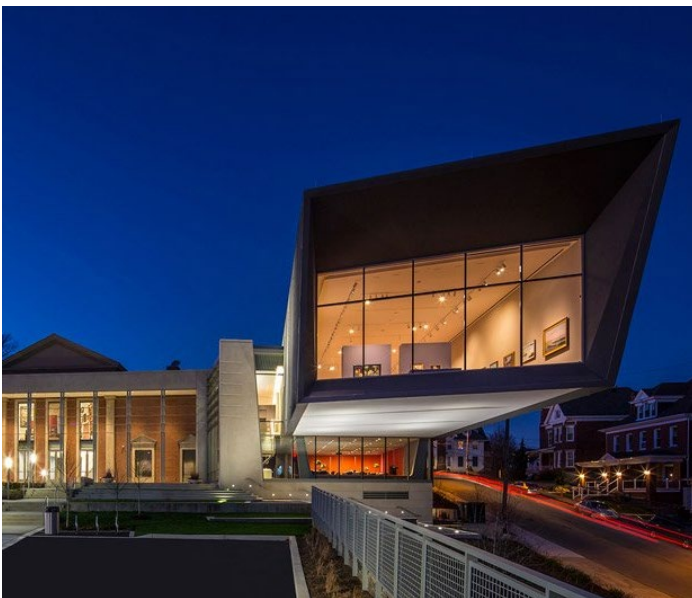
Perelman Performing Arts Center  
New York, NY



The Egg Center for the Performing Arts  
Albany, NY

# Arts Museum - 63k SF

We envisage a highly sculptural and expressed form as part of the architecture of the arts museum. This will pay homage to the Institute of Contemporary Art as the start and finish of the Harbor Walk and enable the pivot onto the linear park as part of the 100 Acres Master Plan. The new arts museum will be programmed with complementary events to the ICA and be able to spill out onto ArtPark. This can extend to music festivals, light shows, indoor/outdoor events and so forth.

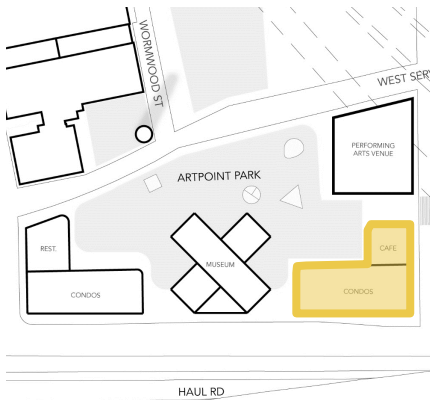


Westmoreland Museum of Art  
Pittsburgh, PA



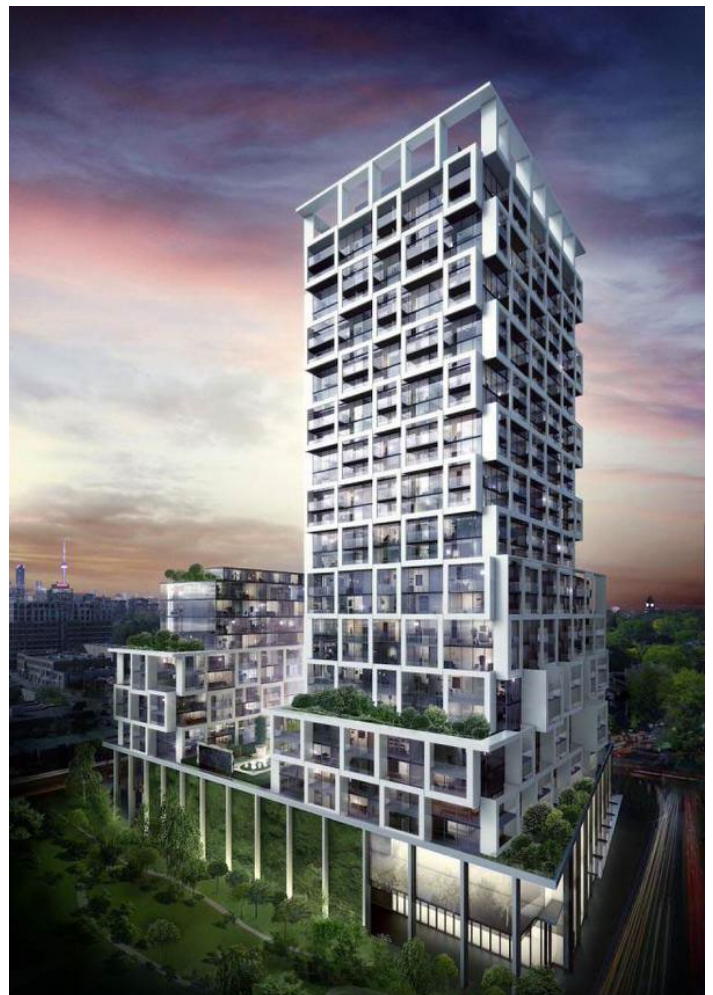
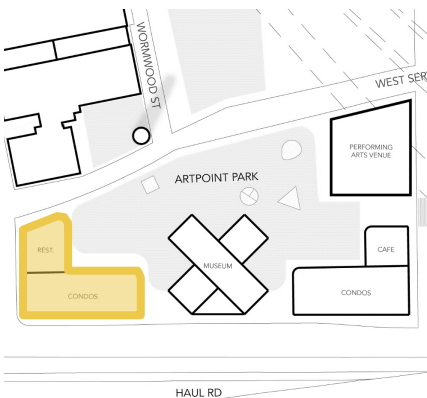
## Condominium A - 117k SF

Condominium A will flank the North of the new arts museum and have a special relationship at the intersection with ArtPark and the Performing Arts Venue. It will have a more experiential retail offering on the ground floor such as a coffee & canvas experience.



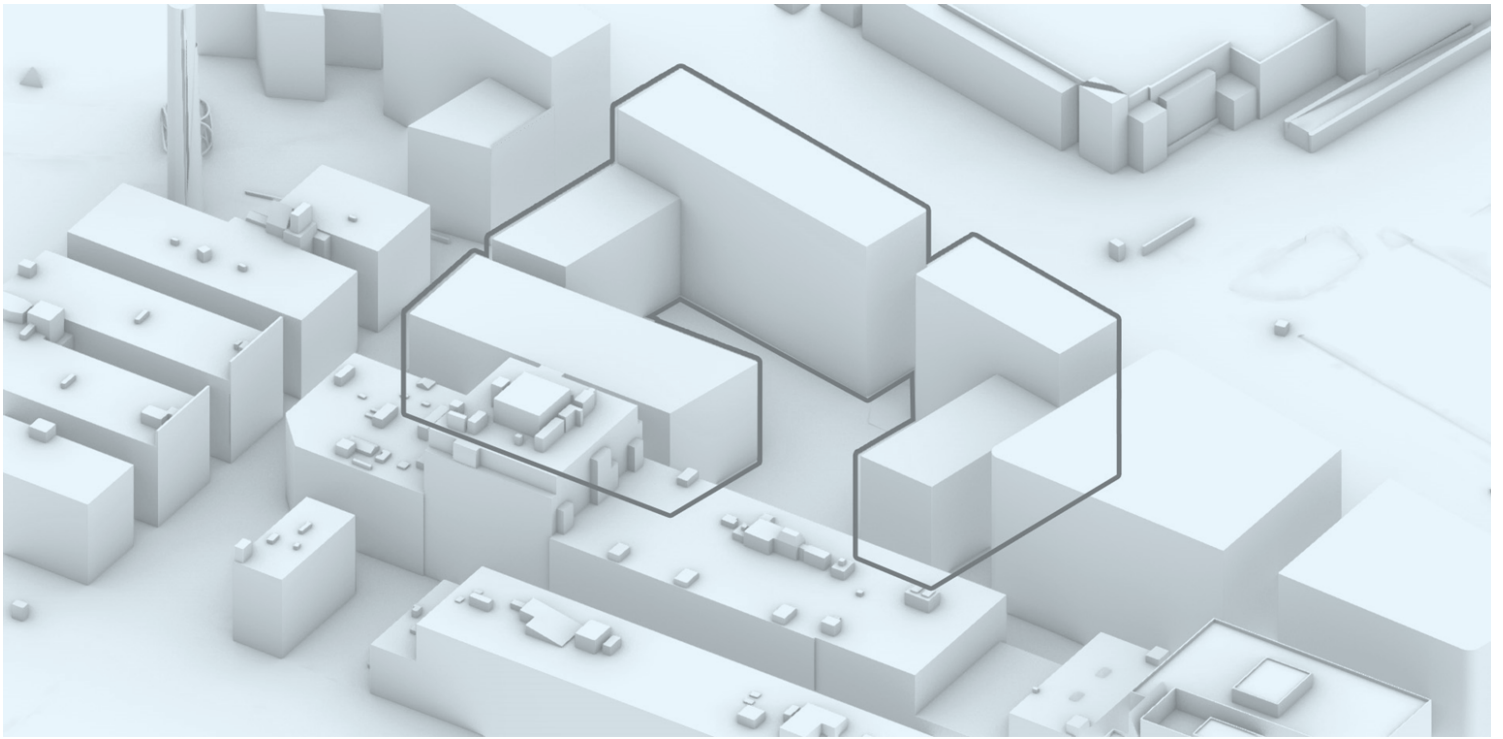
## Condominium B - 138k SF

Condominium B flanks the South of the new arts museum and offers a more subtle oasis from the rest of ArtPark. This building acts as a turning point to wrap ArtPark with a quieter corner. We envisage a high-end restaurant to be operating at the ground floor to leverage the privacy that this corner enables.



Art Shoppe Condos  
Toronto, CAN

# ArtPoint Residences



# Multifamily A - 373k SF

Multifamily A is the larger of the two multifamily assets within ArtPoint Residences which encloses Medallion St Park. It will be an asset class that is higher in building height as it faces the Avenue of the Arts. This will have 20% affordable mixed throughout the entire residences to help address Boston's affordability crisis

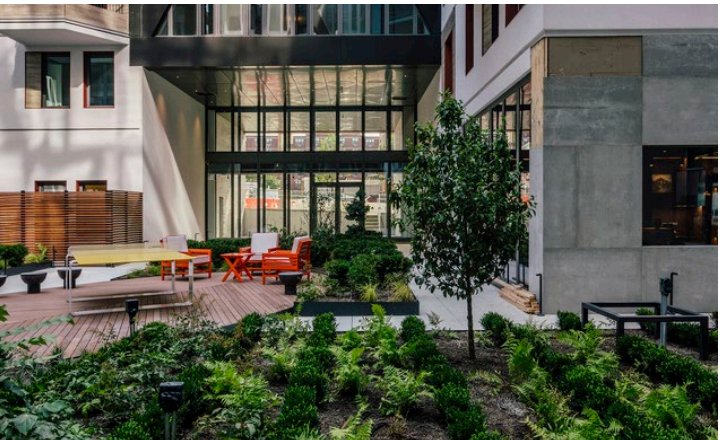
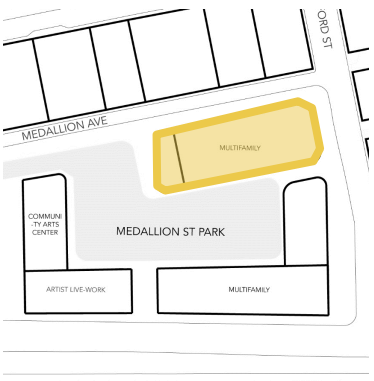
We envisage multifamily A as the larger asset will have a grocery store at the ground level.



# Multifamily B - 221k SF

Multifamily B is the smaller multifamily assets within ArtPoint Residences which encloses Medallion St Park. It is a smaller asset with a lower building height to respect the landmark structures immediately West of the site.

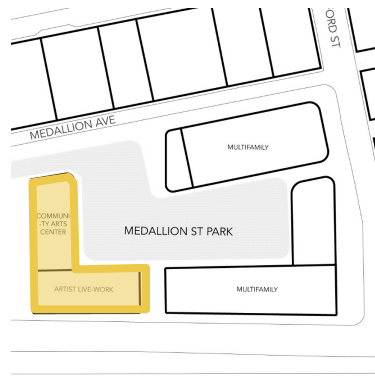
Similar to Multifamily A this will have 20% affordable housing spread across the entire asset.



Denizen Bushwick  
Brooklyn, NY

## Artist Live/Work - 110k SF

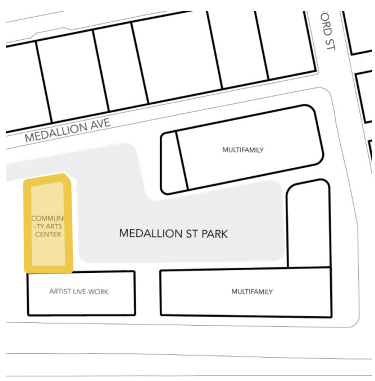
The artist live/work building is an important element in restoring and preserving the community of artists in Fort Point that have given so much to the culture of Boston. We plan to work with the Fort Point Arts Community (FPAC) in determining the best use of space, leasing up, and managing the building



Affordable Live/Work E. 7th Street,  
Los Angeles, CA

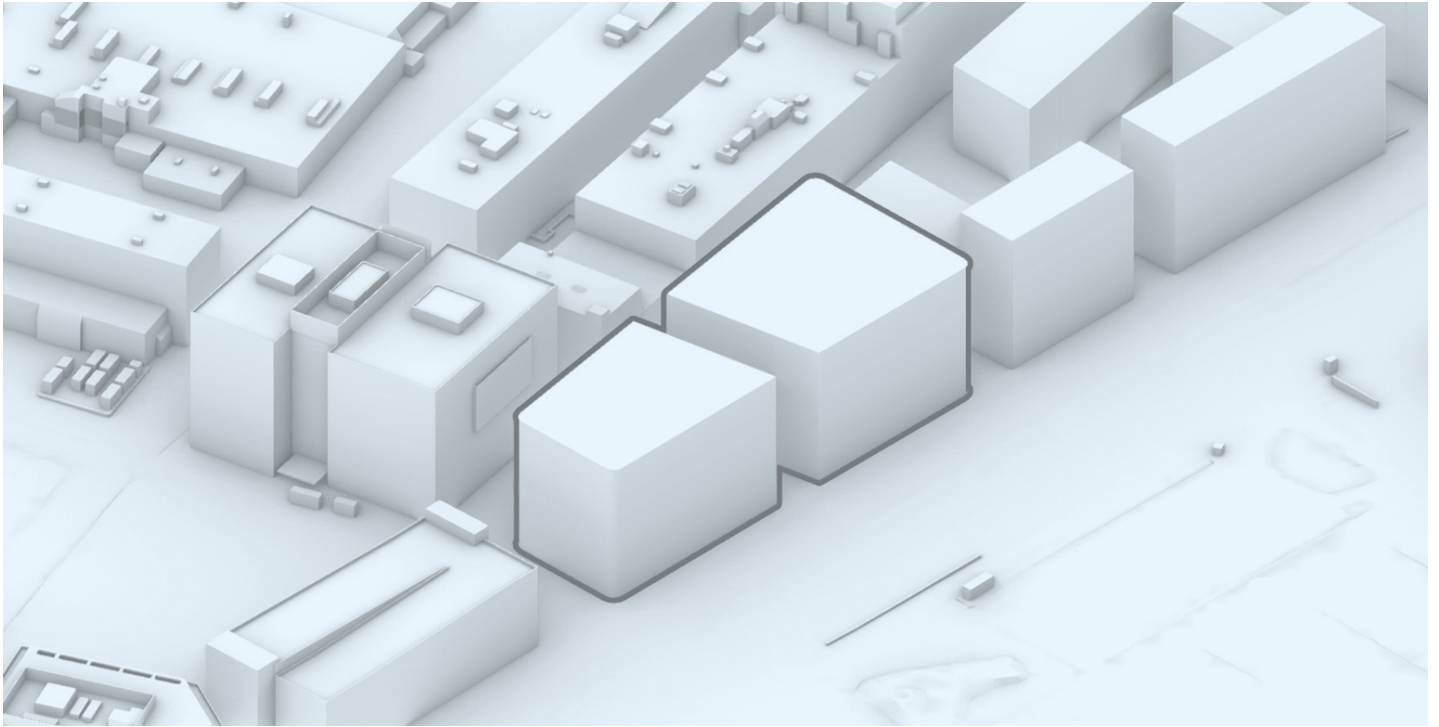
## Community Arts - 6k SF

We are offering a rent-free space for the community to connect to the arts. We envision low and no cost community engagement initiatives in this space including after-school and summer arts programs, gallery shows, design-based workforce training, community film screenings, and accessible temporary workspace.



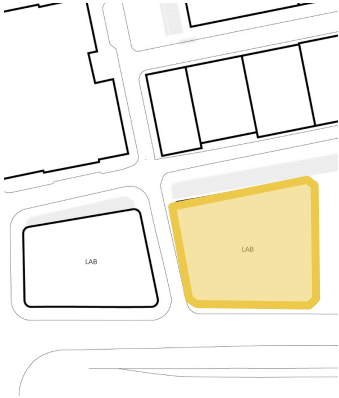
Mission Cultural Center  
San Francisco, CA

# Life Science Center



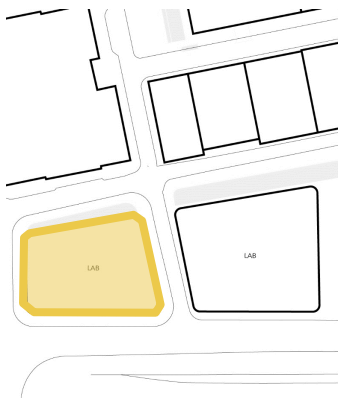
## Lab A - 262k SF

Speculative full lab buildings with 16' floor to floor heights. The first phase of ArtPoint will leverage the current growth in demand for life science real estate. The two buildings are adjacent to other lab facilities to the South of the site.



## Lab B - 212k SF

They will feature all the necessities of life science R&D including chem storage, large loading facilities, adequate freight elevators, base building pH, variable volume HVAC, heat recovery, increased hot water and chilled water supplies, increased electrical service, emergency power, etc.

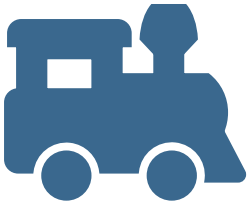


Mixed-Use Lab, Soldiers Field Road  
Allston, MA

# SUSTAINABILITY



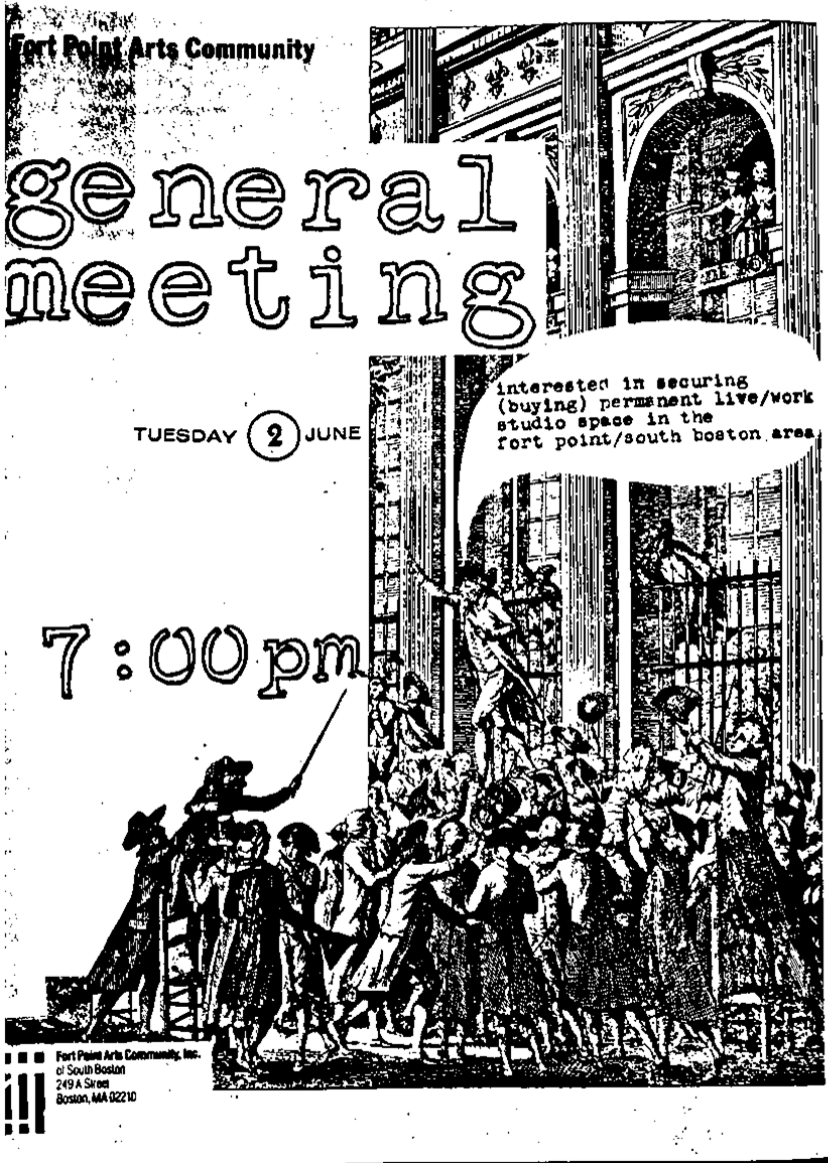
- **Minimum LEED Gold** standard with the built to suit office building meeting **LEED Platinum and Passive House**
- **Compliant with Specialized opt-in Building code of Mass DOER Straw Proposal.**
- Commitment to electrification to meet BERDO 2.0



- **New Transit Hub** to encourage a modal shift to public / active transit
- Targeting lower parking ratios



- **Minimizing embodied carbon**
- Recycling construction material & reducing construction waste
- Low concrete carbon



# Financial Proposal

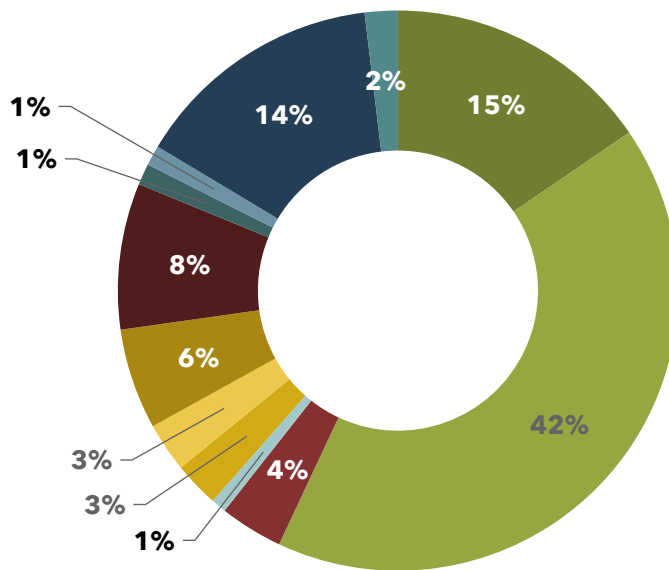
ArtPoint



# Development Budget

Cost Head (\$M)	Phase 1 (A3)	Phase 2 (A2)	Phase 3 (A3)	Phase 4 (A2)	Total
Pre-Paid Ground Rent	133	267	91	68	527
Hard Cost	259	579	214	217	1,269
Sub-Grade Parking	25	41	33	13	111
Mitigation & Linkage	5	22	-	-	27
Additional Public Benefits	-	75	-	5	80
Siteworks & Infrastructure	15	-	57	15	87
Soft Costs	39	87	26	26	178
Tenant Improvements (TIs)	97	161	-	-	258
Leasing Commissions (LCs)	13	25	-	-	37
FF&E	5	19	3	9	35
Interest Reserve	46	317	74	31	465
Development Fees	13	27	10	8	58
<b>Development Costs</b>	<b>650</b>	<b>1,618</b>	<b>507</b>	<b>392</b>	<b>3,132</b>

## Uses of Funds



- Pre-Paid Ground Rent
- Hard Cost
- Sub-Grade Parking
- Mitigation & Linkage
- Add'l Public Benefits
- Siteworks & Infrastructure
- Soft Costs
- Tenant Improvements (TIs)
- Leasing Commissions (LCs)
- Development Fees
- FF&E
- Interest Reserve

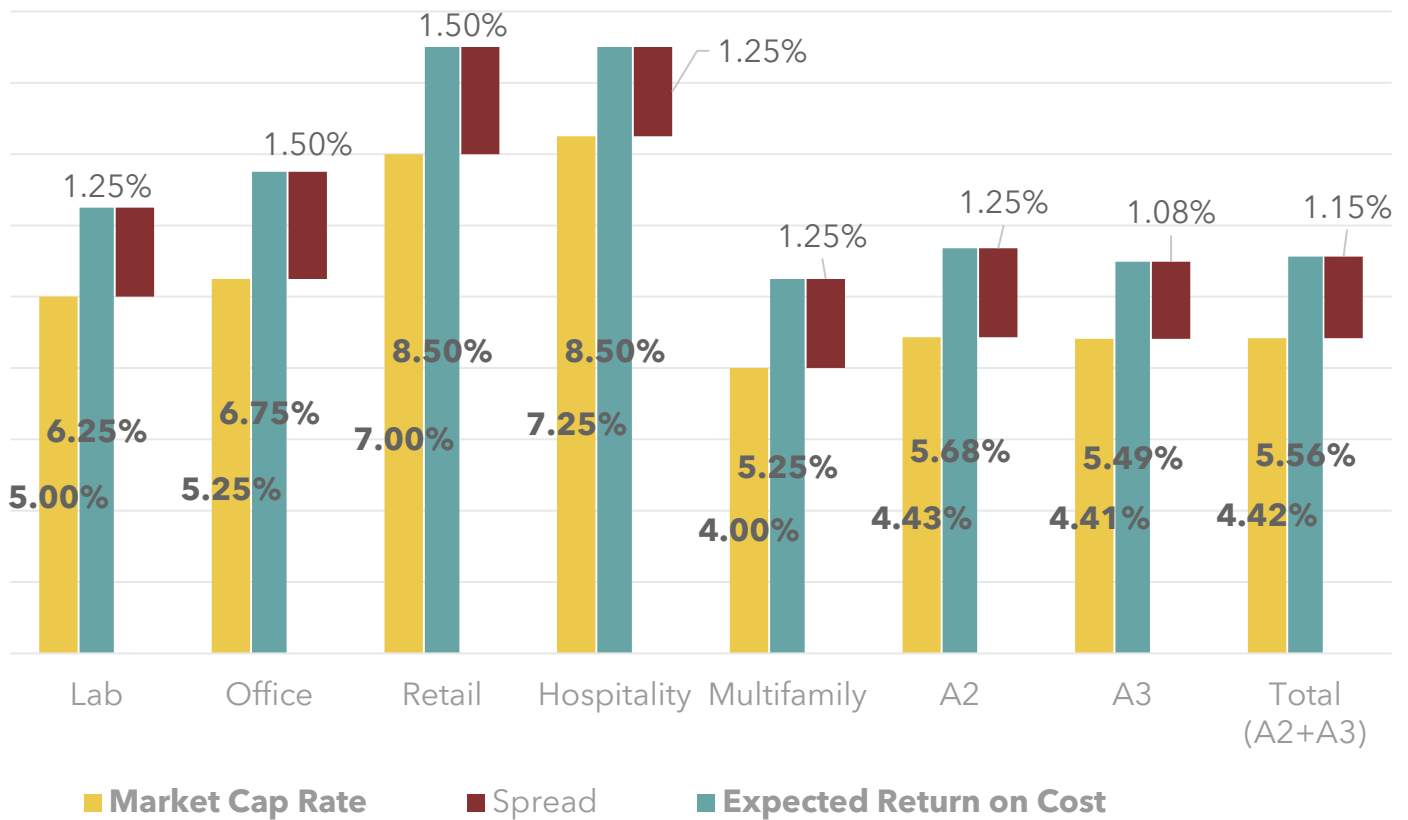
## A2 Land Parcel

Cost Head (\$M)	Offices	\$/RSF	Labs	\$/RSF	Retail	\$/RSF	Hotel	\$/RSF	Condo	\$/RSF
Pre-Paid Ground Rent	85	151	101	290	(10)	(295)	91	373	91	277
Hard Cost	253	450	210	600	7	200	109	450	214	600
Sub-Grade Parking	16	29	17	48	-	-	8	32	33	100
Mitigation & Linkage	11	19	11	31	-	-	-	-	-	-
Additional Public Benefits	25	44	50	143	-	-	-	-	-	-
Siteworks & Infrastructure	-	-	-	-	-	-	-	-	57	173
Soft Costs	38	68	31	90	1	40	16	68	26	78
Tenant Improvements (TIs)	70	125	79	225	12	350	-	-	-	-
Leasing Commissions (LCs)	14	25	10	30	-	-	-	-	-	-
FF&E	7	13	5	14	-	-	6	25	3	10
Contingency	17	30	16	46	0	12	7	27	16	50
Development Fees	17	30	16	46	-	12	7	27	16	50
<b>Development Costs</b>	<b>549</b>	<b>976</b>	<b>541</b>	<b>1,547</b>	<b>11</b>	<b>318</b>	<b>241</b>	<b>992</b>	<b>448</b>	<b>1,363</b>

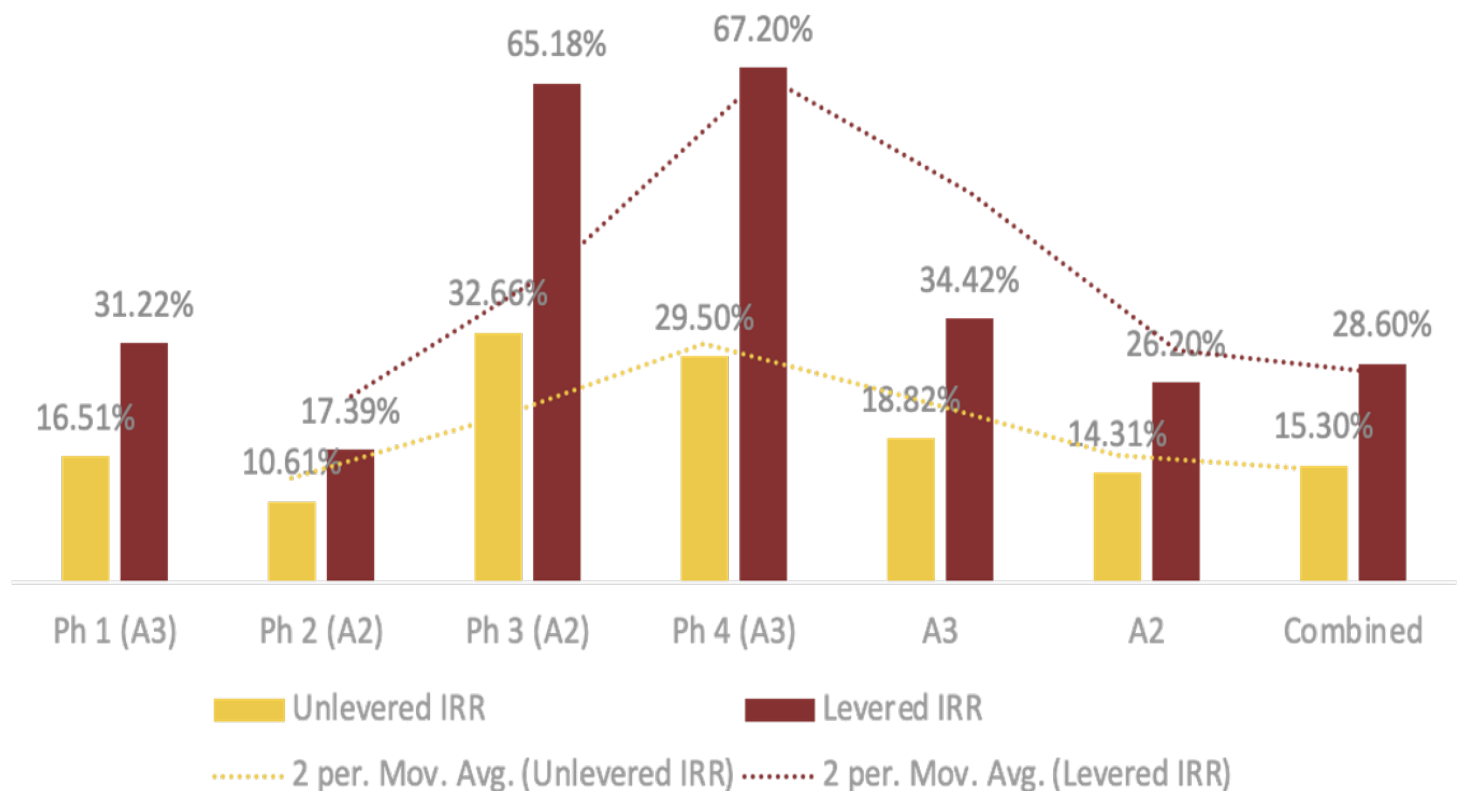
## A3 Land Parcel

Cost Head (\$M)	Labs	\$/RSF	Multifamily	\$/RSF
Pre-Paid Ground Rent	133	308	36	63
Hard Cost	258	600	217	379
Sub-Grade Parking	25	58	13	23
Mitigation & Linkage	5	12	-	-
Additional Public Benefits	-	-	5	9
Siteworks & Infrastructure	15	35	15	26
Soft Costs	39	90	26	46
Tenant Improvements (TIs)	97	225	-	-
Leasing Commissions (LCs)	13	30	-	-
FF&E	5	12	9	15
Contingency	17	40	14	24
Development Fees	13	30	8	13
<b>Development Costs</b>	<b>620</b>	<b>1,439</b>	<b>343</b>	<b>598</b>

## Return on Costs



## Unlevered & Levered IRR



# Stabilized Operating Financials

## Offices

Particulars	A2
Gross Area (sf)	624,610
Efficiency	90%
Leasable Area (sf)	562,149
Average Rent (psf NNN)	\$ 65
Potential Gross Income (PGI)	\$ 36.54 m
Other Income	\$ 0.64 m
Vacancy	\$ (1.83) m
<b>Net-Operating Income (NOI)</b>	<b>\$ 35.35 m</b>

### Assumptions

- 78% efficiency for the office building.
- Total 438 units (~88 affordable units)
- Assumed Sales Rate
  - Market (80%): \$ 1,700 psf
  - Affordable (20%) at 60% AMI: \$ 170 psf
- 329 parking units (75% of 438)
- Parking Sales Value: \$ 75,000 per parking.

## Condominiums

Particulars	A2
Gross Area (sf)	421,514
Efficiency	78%
Leasable Area (sf)	328,781
Average Sale (psf)	\$ 1,394
Market Rate Units	80%
Affordable Units (60% AMI)	20%
<b>Sales Value</b>	<b>\$ 491.20 m</b>

### Assumptions

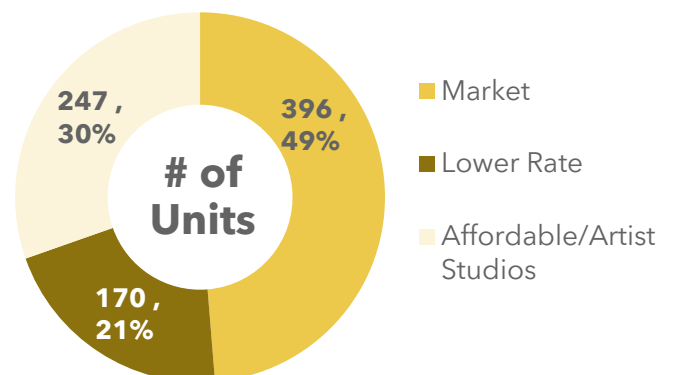
- 90% efficiency for the office building.
- NNN basis average rent of \$ 65 psf.
- Other income includes parking income at \$ 450 per month for each parking at 70% occupancy.
- General Vacancy considered at 5%.
- No operating expense basis NNN leases.

## Multifamily - A3

Particulars	Market Rate	Lower Rate	Affor/Art Stud	Total
Gross Area (sf)	381,072	163,316	190,000	734,388
Efficiency	78%	78%	78%	
Leasable Area (sf)	297,236	127,387	148,200	572,823
Average Rent (psf/m)	\$ 5.75	\$ 4.60	\$ 2.00	\$ 4.52
Potential Gross Income (PGI)	\$ 20.51 m	\$ 7.03 m	\$ 3.56 m	\$ 31.07 m
Other Income	\$ 1.41 m	-	-	\$ 1.41 m
Vacancy	\$ (1.02) m	\$ (0.35) m	\$ (0.18) m	\$ (1.55) m
Effective Gross Income (EGI)	\$ 20.89 m	\$ 6.68 m	\$ 3.38 m	\$ 30.92 m
Operating Expenses	\$ (9.23) m	\$ (3.16) m	\$ (1.60) m	\$ (13.98) m
<b>Net-Operating Income (NOI)</b>	<b>\$ 11.66 m</b>	<b>\$ 3.52 m</b>	<b>\$ 1.78 m</b>	<b>\$ 68.54 m</b>

### Assumptions

- 78% efficiency for multifamily.
- Total 813 units
- Parking for 40% units: 325
- Other income includes parking income at \$ 450 per month for each parking at 80% occupancy.
- General Vacancy considered at 5%.
- Operating Expenses: 45% of PGI



# Stabilized Operating Financials

## Labs/Life-Sciences

Particulars	A2	A3	Total
Gross Area (sf)	368,436	453,600	822,036
Efficiency	95%	95%	
Leasable Area (sf)	350,014	430,920	780,934
Average Rent (psf NNN)	\$ 90	\$ 90	-
Potential Gross Income (PGI)	\$ 31.50 m	\$ 38.78 m	\$ 70.28 m
Other Income	\$ 0.79 m	\$ 0.98 m	\$ 1.77 m
Vacancy	\$ (1.58) m	\$ (1.94) m	\$ (3.52) m
Effective Gross Income (EGI)	\$ 30.72 m	\$ 37.82 m	\$ 68.54 m
Operating Expenses	-	-	-
Net-Operating Income (NOI)	\$ 30.72 m	\$37.82 m	\$ 68.54 m

### Assumptions

- 95% efficiency for the labs/life science building.
- NNN basis average rent of \$ 90 psf.
- Other income includes parking income at \$ 450 per month for each parking at 70% occupancy.
- General Vacancy considered at 5%.
- No-operating expense basis NNN leases.
- Labs/Life Sciences on A3 is proposed to be sold post-completion depending on market conditions.

## Hospitality

Particulars	A2
Gross Area (sf)	347,493
Efficiency	70%
Leasable Area (sf)	243,245
# of Keys	486
ADR	\$ 220
Room Revenues	\$ 29.30 m
Other Income	\$ 7.32 m
Effective Gross Income (EGI)	\$ 36.62 m
Operating Expenses	\$ (16.11) m
<b>Net-Operating Income (NOI)</b>	<b>\$ 20.51 m</b>

### Assumptions

- ADR of \$ 220 per key.
- Occupancy of 75%
- Other Income: Food & Beverages; Banqueting; Events; 25% of Room Revenues
- Gross Operating Margin of 45%

## Retail

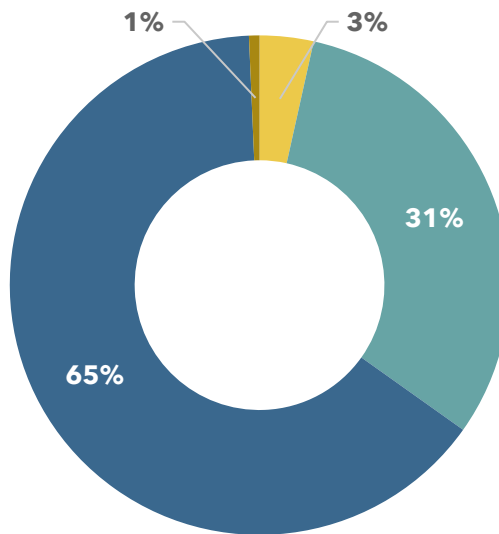
Particulars	A2
Gross Area (sf)	45,000
Efficiency	75%
Leasable Area (sf)	33,750
Average Rent (psf NNN)	\$ 30
Potential Gross Income	\$ 1.01 m
Other Income	-
Vacancy	\$ (0.10) m
Effective Gross Income (EGI)	\$ 0.91 m
Operating Expenses	-
<b>Net-Operating Income (NOI)</b>	<b>\$ 0.91 m</b>

### Assumptions

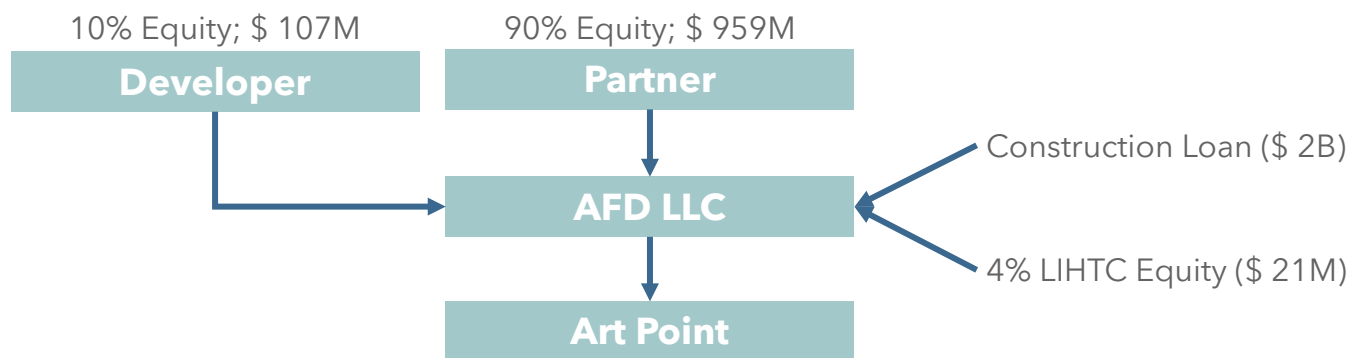
- Efficiency of 75%
- Average rent \$ 30 psf NNN
- Vacancy of 10%
- No other income considered

# Sources of Funds

- Developer Equity (10%)
- Partner Equity (90%)
- Construction Loan
- 4% LIHTC Credit



# Structure



# Phasing



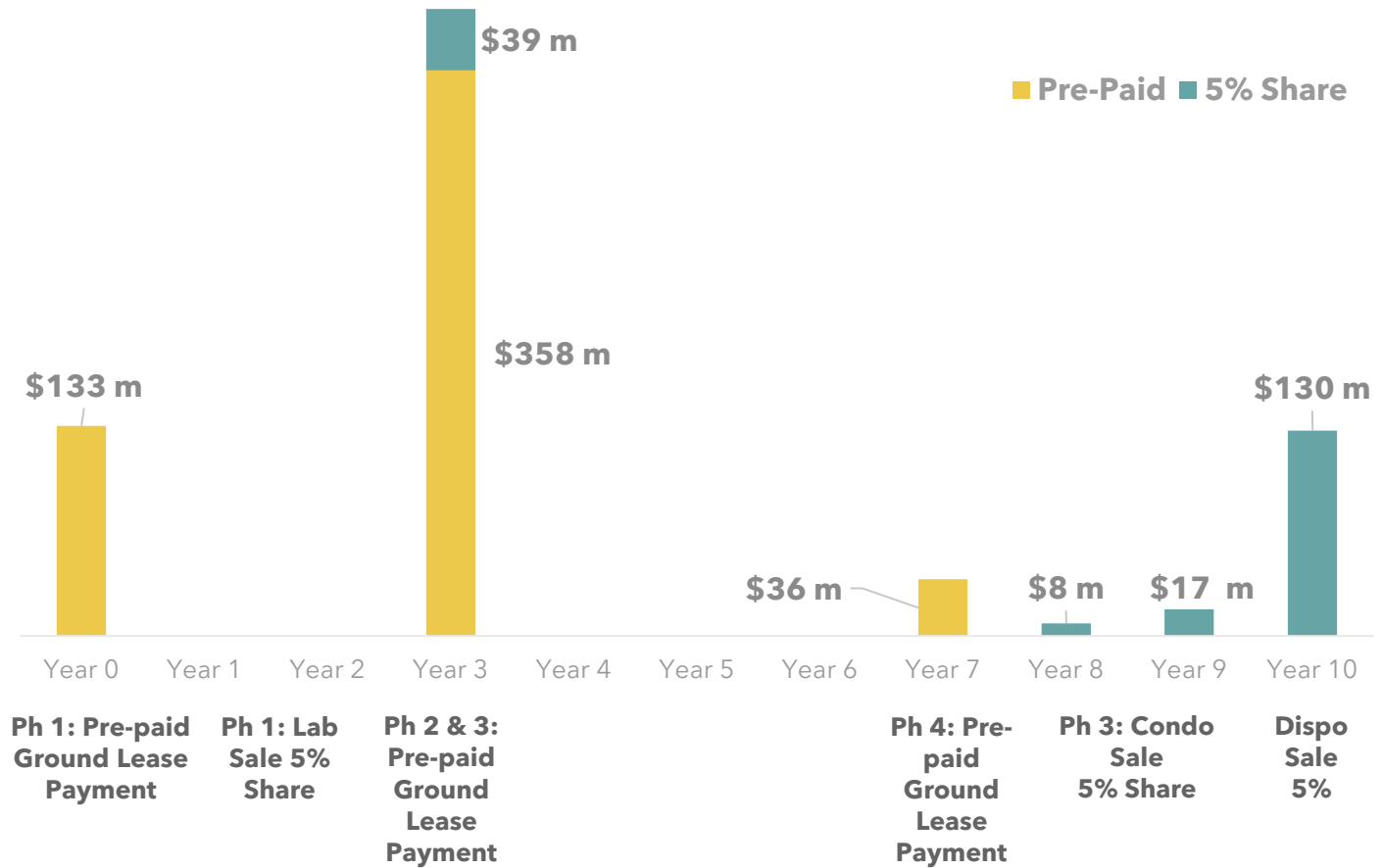
**Phase 1**  
 Speculative lab development (~3 years). Capitalize and dispose after stabilization and use proceeds to fund Phase 2

**Phase 4**  
 MF & Artists live/work to commence last. Likely completion and stabilized in 3 ~ 4 years.

**Phase 3**  
 Condos to be developed first. Museum and Venue delivered as core and shell. (3 ~ 5 years)

**Phase 2**  
 Proceeds from Phase 1 to assist in funding key infrastructure. (5 ~ 7 years)

# Ground Lease Schedule



- Total Ground Lease payment of \$ 721M over 10 years of development, stabilization, and disposition.
  - **Year 0:** \$ 133 m Pre-Paid Ground Lease Payment for receiving building permit for Phase 1 development.
  - **Year 3:** \$ 358 m Pre-paid Ground Lease Payment for Phase 2 & Phase 3 development along with \$ 39 m 5% Revenue Share payment for Phase 1 (A3 Lab Building) Sales.
  - **Year 7:** \$ 36 m Pre-Paid Ground Lease Payment for Phase 4 development.
  - **Year 8:** \$ 8 m 5% Revenue Share payment from Phase 3 (A2 Condo Building) Sales 25% of total stock.
  - **Year 9:** \$ 17 m 5% Revenue Share payment from Phase 3 (A2 Condo Building) Sales 50% of the total stock.
  - **Year 10:** \$ 130 m of 5% Revenue Share payment from Phase 3 (A2 Condo Building) Sales 25% of the total stock along with disposition of the entire stabilized asset.
- Total ground lease payment of \$ 721M i.e. \$ 286 psf of the proposed development. \$ 527 M ground rent in phases and \$ 194 M payment as 5% revenue share.
- The present value of the ground lease payment @10% discount rate would be \$ 465M i.e. \$ 184 psf of proposed development.
- Flexibility of making payments earlier depending on the response of the project.

# Underwriting Assumptions

- Developer Equity: 10% of the total equity amount with 20% promote beyond 8% preferred return.
- Partner Equity: 90% of the total equity amount with 20% promote beyond 8% preferred return.
- 4% LIHTC Credit for Affordable Housing:
  - Eligibility basis of \$1.9 million for the affordable segment.
  - Eligibility enhancement of 30%.
  - Applicable Tax Credit Rate of 3.14% as per Massachusetts DHCD QAP 2020-21.
  - Total Tax Credit for 10 years \$ 20.75 million.
  - Amount received evenly during construction of Affordable Housing.
- Debt
  - 65% Loan to Cost Borrowing.
  - 30-year amortization.
  - Interest Only during construction period.
  - Fixed Rate: SOFR (2.23%) + 3% = 5.23%.
- Equity contribution on a pari-passu basis for 35% amount balance funded by Debt of 65%.



FORT POINT ARTS COMMUNITY

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# Diversity and Inclusion

ArtPoint

# Diversity and Inclusion Plan

AFD understands the importance of creating a diverse, accessible, and equitable development in Fort Point for the benefit of everyone - current residents, artists, and the greater Boston community. We seek to engage, both in development and operation, businesses and individuals who have been historically underrepresented and uninvolved in participating in the benefits and opportunities of real estate.

Our approach to this development is responsive to this challenge through assembling a team reflective of the change necessary in our industry and at large. Our vision for Fort Point is more than just developing a high-impact, mixed-use development. We believe it is an opportunity for diversity and inclusion at all levels of the development process, as well as leading community planning efforts, and utilizing diverse management teams. Our inclusion goals seek to empower and uplift underrepresented people and businesses whose strength is in the diversity of their experiences and perspectives. At every level, we have formed partnerships with Professional Services, Construction, and Operations with successful track records of diversity and inclusion.

Our process is designed to deliver tangible progress towards diversity and inclusion. Our own in house team, comprised of 80% people of color and 40% female, speaks to our commitment to diversity. We also believe it is important to uplift people within our communities, which is why we have committed to not only working with M/WBE firms, but those local to Fort Point and Boston. This is why we have decided to partner with HMFH (WBE) as our architect of record, RSE Associates (WBE) for our engineering needs, a JV between Turner Construction and Janey Construction Management (MBE) for construction, and our in house team in partnership with Fort Point Arts Community, for property management. Our connection to a diverse workforce is seen throughout our committed partners.

## Team Stakeholders

Ownership / Equity	Professional Services	Construction	Management and Operations
<ul style="list-style-type: none"><li>•AFD’s diverse team is M/WBE with a leadership team comprised of 80% people of color and 40% female.</li><li>•AFD believes diversity is at the heart of empowering communities and creative development.</li></ul>	<ul style="list-style-type: none"><li>•HMFH (WBE) is predicated on a belief that the best architecture builds community.</li><li>•RSE Associates (MBE) grew from several firms coming together under one unifying vision: people-centered engineering.</li></ul>	<ul style="list-style-type: none"><li>•Janey (MBE), founded in 1984 in Roxbury, is one of the most diverse commercial builders in the Northeast.</li><li>•Turner Construction and Janey (MBE) have a history of successful collaboration with a diversity and inclusion focus in the Seaport on the World Trade Center Revitalization.</li></ul>	<ul style="list-style-type: none"><li>•We are working with the Fort Point Arts Community, a local artist nonprofit, to bring the vibrancy and community in ArtPoint to life.</li><li>•Partnering with FPAC will allow us to empower the local arts community within our mixed income housing, creative workplace, and community arts space.</li></ul>

# Programming & Tenancy

## Transit Center

- High quality public transit makes cities more inclusive by increasing mobility and opportunity, particularly for people with low incomes and people of color.
- Aligned in goals with the South Boston Seaport Strategic Transit Plan, jointly led by BPDA and BTC, we are seeking to make ArtPoint the transit hub for this area by contributing \$75M for a transit hub utilizing existing rail tracks at our site.

## Affordable Housing

- We are committed to providing 20% affordable housing on-site, ranging from affordable residential and live/work rental units to affordable condo homeownership opportunities.
- The residential units will be embedded within our mixed income developments
- A singular 100% affordable artist live/work building will be provided on site. We believe local artists are the soul of ArtPoint and Fort Point at large.

## Arts and Culture

- An arts museum and performing arts venue are at the center of ArtPoint.
- Artists have been a major stakeholder in Fort Point since 1976. We believe their continued tenancy is of utmost important within ArtPoint.
- 122 units of permanently affordable artist live/work
- 6k sq ft community arts center provided rent free

**The need for appropriate live/work space for artists has reached a critical point in Boston. The vitality of the arts community will directly affect the development of this city over the next twenty years, with a dramatic rippling effect on future economic, historic, social, educational and cultural growth.**

“Survival of a Neighborhood” Fort Point Arts Community (1984)

**AFD**

ArtPoint

# Mission Statement

AFD is a purpose-driven, vertically integrated real estate developer committed to building vibrant communities with lasting impact.

## Core Values



# AFD Leadership Team



**Ashley Katz**  
Head of Community Oriented  
Development



**Himanshu Tiwari**  
Head of Finance



**Miguel Dávila Uzcátegui**  
Head of Planning



**Steven La**  
Head of Transit Oriented Development



**Tamar Ofer**  
Head of Design



**Sesame**  
Head of Being a Good Boy

# Supporting Material

ArtPoint

# Financial Model

Refer to excel model attached on Canvas or via the following links:

- A2 Final [Financial Template Art Point A2.xlsx](#)
- A3 Final [Financial Template Art Point A3.xlsx](#)



# Market Research

Rental Comps							Source: Axiometric
Building	Neighborhood	Year Built	Mgmt Company	Total Units	Avg Unit Size	Asking Rent PSF	Asking Rent per Unit
660 Washington	Chinatown	2006	Equity Residential	420	701	\$5.17	\$3,627
Kensington	Chinatown / Theater District	2013	Bozzuto Mgmt	381	684	\$5.23	\$3,577
Via	Seaport	2017	Berkshire	428	685	\$5.72	\$3,906
The Benjamin	Seaport	2017	Berkshire	308	848	\$5.66	\$5,023
Watermark Seaport	Seaport	2016	Greystar	301	646	\$5.89	\$3,802
345 Harrison	South End	2018	UDR	585	618	\$5.96	\$3,681
300 Harrison	South End	2015	National Development	315	684	\$5.05	\$3,453
Pierce	Fenway	2018	Samuels & Associates	240	610	\$6.75	\$4,119
The Harlo	Fenway	2017	Bozzuto Mgmt	212	647	\$5.77	\$3,730
30 Dalton	Back Bay	2016	Bozzuto Mgmt	204	901	\$5.92	\$5,334
Avalon Exeter	Back Bay	2014	AvalonBay	157	753	\$6.20	\$4,668
<b>Avg Total</b>		<b>2015</b>		<b>323</b>	<b>707</b>	<b>\$5.76</b>	<b>\$4,084</b>

Condo Comps							
Property	Type	Neighborhood	Status	Delivery	# Condos	% Sold	Actual of Est \$/SF
One Dalton	Condo	Back Bay	Sold/Closed	2019	168	77%	\$2,775
Pier 4	Condo	Seaport	Sold/Closed	2019	106	100%	\$2,189
The Sudbury	Condo/Rental	West End	Sold/Closed	2021	55	16%	\$2,119
50 Liberty	Condo	Seaport	Sold/Closed	2018	120	100%	\$1,785
Echelon	Condo/Rental	Seaport	Sold/Closed	2019/2020	447	77%	\$1,700
Archer	Condo	Beacon Hill	Sold/Closed	2020	67	40%	\$1,698
The Quinn	Condo/Rental	South End	Sold/Closed	2021	101	40%	\$1,668
<b>Avg Total</b>							<b>\$1,991</b>

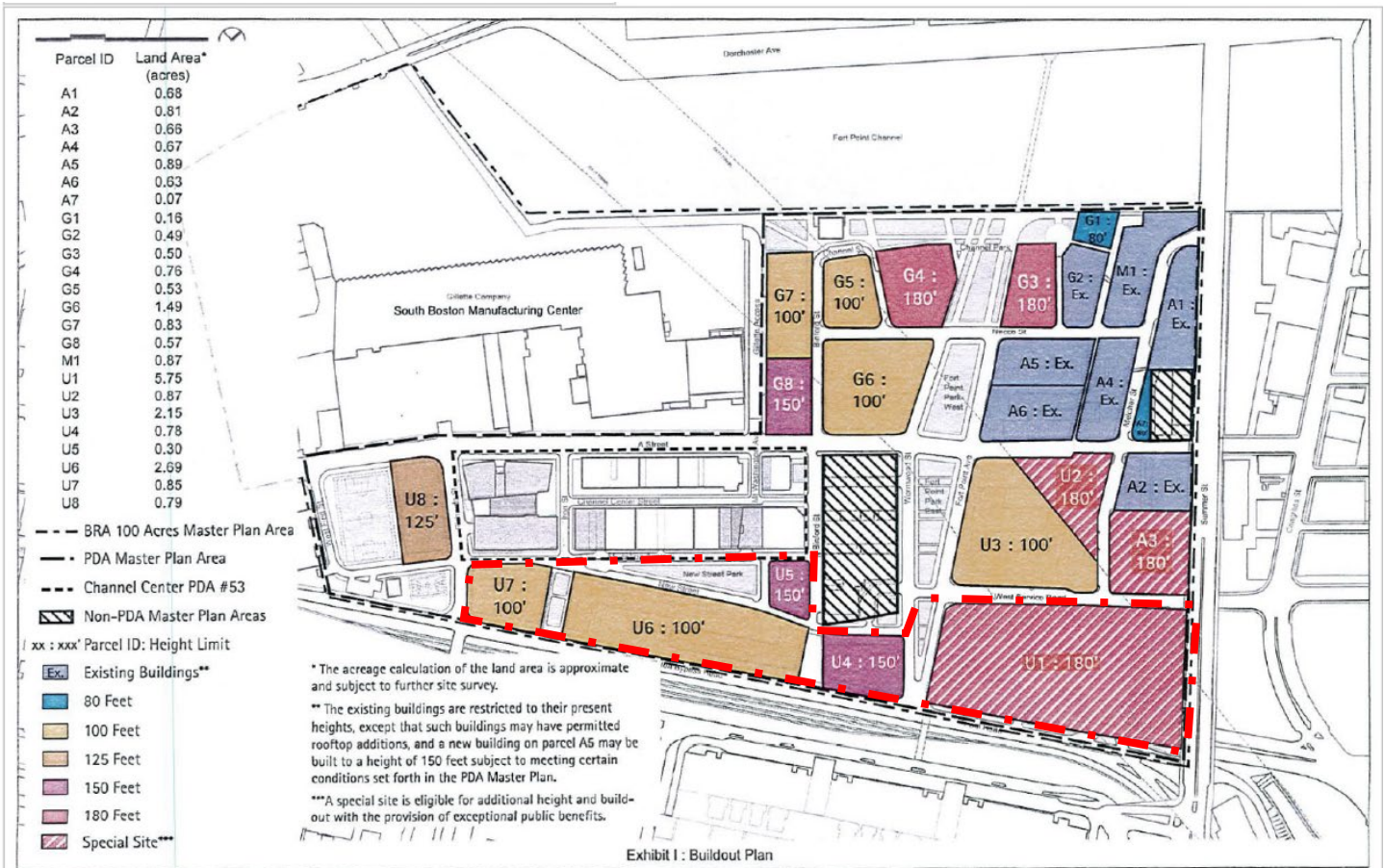
# Market Research

Office Comps					
Property	Type	Neighborhood	Delivery	Unit SF	Actual of Est \$/SF
324 A St	Retail/Office	Seaport	1945	2316	\$ 53-64
22 Boston Wharf Road	Office	Seaport	2018	13310	\$ 79 -96
303 Congress St	Office	Seaport	2000	71898	\$ 65-79
<b>Avg Total</b>					<b>\$73</b>

Hotel Comps			
Property	Neighborhood	Star Rating	ADR
Omni Hotel	Seaport	4-Star	\$277
Residence Inn by Marriott	Seaport	3-Star	\$354
Cambria Hotel	South Boston	3- Star	\$214
Yotel Boston	Seaport	4-Star	\$233
The Envoy Hotel	Seaport	4-Star	\$350
<b>Avg Total</b>			<b>\$286</b>

# Zoning

The current PDA No.69 was approved in 2007 and has maintained the following FAR & height regulations. The parcels of interest on Sites A2 and A3 are U1, U4, U5, U6 and U7.



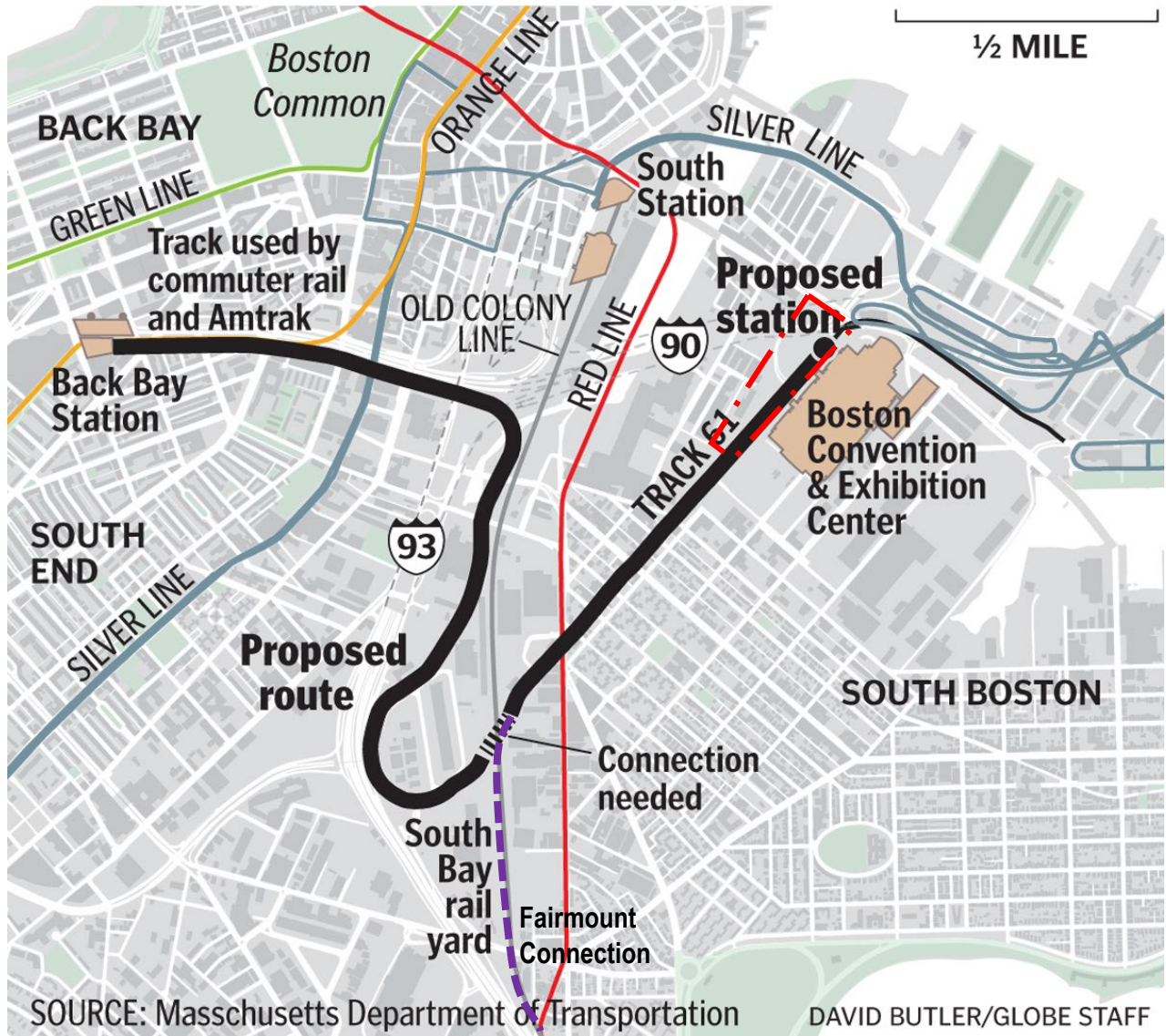
We propose to increase the building heights to our proposed development plan on as well as an increased FAR as identified below on the premise of our exceptional public benefits which include:

- 20% affordable housing across all residential
- 246 units of artists live work
- \$75M contribution to a new commuter rail transit station to service ArtPoint, Seaport and the Boston Convention Exhibition Center
- \$70M for on-site infrastructure and improvements
- \$27M in linkage payments for the creation of affordable housing
- \$4.1M in linkage payments for workforce training
- 2.54 acres of new open space
- A new 63,000 sqft arts museum positioned in the center of Art Point
- A new 16,500 sqft performing arts venue

# Transit Proposal

The Fort Point district is a transit desert. It is surrounded by transportation connections in the peripheral but lack real transit connections towards the center. Right now there are several options which provide the equal travel time between catching the red line, silver line and several buses. There is a Seaport Transportation Management Association formed to provide transit services due to the failing needs of the area being connected.

There currently are investigations underway by MassDOT and the MBTA to reactivate an existing disused railway line called Track 61 to connect the Boston Convention & Exhibition Center to Back Bay Station. There is an existing right of way with existing tracks in certain sections which can be upgraded into revenue service. With relatively minimal work this track could also extend South to connect to the Fairmount Commuter Rail Line as well as North East towards the proposed Raymond L. Flynn Marine Park.



# Model

Site A2  
(plan)



Site A3  
(plan)



# Model

Site A2  
(elevation)



Site A2  
(elevation)



# Model

Site A3  
(elevation)



Site A3  
(elevation)

