



BART Phase II Transit Oriented Communities Strategy Study Case Study Review



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BART Phase II – TOD Transit Oriented Development
by GB Placemaking
Executive Summary



BART Phase II TOD

Transit Oriented Development
Transit Delivery / City Shaping

Executive Summary





Navy Yard Metro Station in Washington, DC is an example of a new TOD district being anchored by a subway station.

Overview

This paper explores how transit station design, delivery methods, value capture and linking transit design with TOD enabled or hindered good TOD outcomes. Eight case studies provide the foundation for the analysis: Fruitvale in Oakland; Wilshire / Vermont in Los Angeles; the Pearl District in Portland, Oregon; Marine Gateway in Vancouver, BC; Denver Union Station in Denver, Colorado; and Rosslyn Ballston and Tysons in northern Virginia. A more in depth look at the public policy framework and development program of each TOD is the subject of a separate report.

Two complementary high-level questions were investigated as part of this enquiry:

1. How did transit delivery methods, station design and access enable or hinder good TOD outcomes?

2. What are the principals, key implications and lessons learned applicable to BART Phase II?

The TOD's examined here were selected for their applicability to Phase II. The delivery methods span conventional transit agency delivery, public / private partnerships (P3's), and a partnership set-out in a master developer agreement. Looking forward to the

The case studies highlight the importance of intentionally designing and delivering Phase II BART stations to achieve people moving and city shaping as co-equal outcomes

toward the next steps of BART Phase II the case studies were assessed within a framework of asking the following questions:

1. **How do station and TOD integration effect good TOD outcomes?**

Transit agencies have come to realize the integration of stations, TOD and the surrounding community have a material effect on the success of the transit system.

2. **How do transit design decisions impact TOD?**

Transit projects which broke the traditional design mold tended to stand out for the scale of TOD and transit use achieved.

3. **What role did value capture play in helping pay for the transit investment?**

In 5 of the 7 case studies tax increment and assessment districts were critical parts of paying for transit capital funding.

4. **Is one type of delivery method better for TOD?**

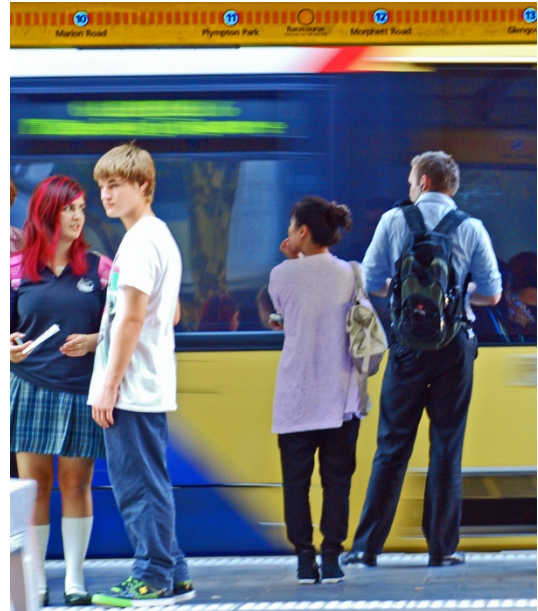
Transit delivery methods were not a predictor for achieving good TOD outcomes.

5. **What does experience suggest in structuring transit P3's to allow for TOD?**

Transit design & TOD opportunities are typically on different time cycles – P3's need a mechanism to seize TOD opportunities without incurring major cost penalties .

6. **What are the lessons from Denver's transit only and transit + TOD P3's?**

A key takeaway from Denver's deliberations on whether or



Projects where TOD was an early and on-going consideration in transit design decisions (Denver Union Station, the Pearl District and Rosslyn Ballston) stood out in terms of the resultant scale of TOD investments and the pedestrian-oriented car-lite lifestyle which followed.

not to include TOD in a P3 is that context, timing and the scale of the TOD opportunity all matter.

Overview of Case Studies

Station

Fruitvale
4-acers
1972 station
2004 TOD



A groundbreaking equitable joint development project immediately adjacent to the BART station, yet the proximity was not sufficient to achieve synergy between the station and the TOD. Value capture included tax increment for the TOD and the transit replacement parking.

**Rosslyn
Ballston**
260-acres
1979 5 stations
On-going



America's best TOD example. Five-station corridor to enable TOD while preserving neighborhoods. 260-acre dense walkable corridor, nearly 80% of transit riders arrive by foot. Value capture included \$100 million for a TOD alignment, developer contributions for TOD area improvements.

**Wilshire
Vermont**
3.25-acres
1979 Station
2007 TOD



Transit agency joint development project on subway air rights. The project enhanced the transit rider experience, but the inward-looking design has limited broader TOD in the district. An assessment helped fund 9% of the capital cost of the subway line, tax increment was used for TOD and the station upgrade.

Pearl District
90-acres
2001 streetcar
On-going



Portland's most successful new neighborhood. The product of a master developer agreement and designed around transit, a guide for creating walkable, transit-oriented places. Value capture - tax increment and assessments - paid for 40% of the costs of streetcar line, parks and affordable housing.

Denver Union Station

19.5-acres
2014
2019 build-out



Major new downtown district, hub of regional transit system, delivered by a P3 for both TOD and transit. Breaking mold on transit design yielded 50% lower transit costs and an exemplary TOD. Value capture from Metro District property taxes, tax increment helped pay for transit capital and other infrastructure.

Marine Gateway

4.8-acers
2009 station
2016 TOD



Vancouver's first mixed use suburban TOD. The high-density TOD serves as the glue linking a Skytrain and a major bus station. Ridership increased by 30%. The P3 frustrated even better transit and TOD integration. Value capture resulted in \$17.8m (CND) in community benefits payments to the city.

Tysons

1,700-acers
2014 4 stations
Ongoing



Tysons Metrorail stations are starting the transformation from a suburban activity center into a dense TOD. Despite billions in new TOD, ridership lags because of station locations and lack of walkability. Value capture through a \$400 million assessment provided 14% of the transit capital cost.

Station and TOD Integration

Transit agencies have come to realize the integration of stations, TOD and the surrounding community have a material effect on the success of the transit system. As stations such as Berryessa and some of the case studies illustrate, that has not always been the case.

The case studies span more than 40 years of linking transit and land use and a variety of approaches for integrating transit and TOD. In that period there have been a fundamental shift in how stakeholders see transit. Transit has gone from being exclusively about people moving, to evolving to people moving and city shaping being co-equal objectives. Solving for those dual objectives has some important implications for how station access, placemaking and connecting stations to the community is handled.

The approach and outcomes relative to station and TOD integration not surprisingly vary considerably:

Through the passage of time the **Rosslyn Ballston** corridor stations have become

TOD delivers more riders at a lower cost than transit parking at densities of 60 units or more per acre

station upgrade consequently and connecting it to a new pedestrian spine.

better integrated with the community, much like a spreading plant might grow into and around the station. While the stations were located to shape growth, they also reflect the urban design of another era when stations were apart from the community. In response the new Rosslyn sector plan features a new



Portland's Pearl District, like Denver Union Station and the Rosslyn Ballston Corridor are excellent examples of simultaneously linking transit design and land use planning to create vibrant transit-oriented communities. While the objective was the same, the transit delivery method in each instance was different.

Denver Union Station and the **Pearl District** are excellent examples of what can happen when the TOD and the transit are designed together. The stations, TOD streets, open spaces and active ground floors are seamlessly integrated resulting in a high degree of transit use and walk trips.

Marine Gateway stands out as the best example of an after the station opened integration of station and TOD. Offsetting the bus transit center from the rail station allowed the TOD team to design a project which draws transit users through the TOD. Like Rosslyn Ballston, the development spread around and enveloped the station. On the other hand, busy streets and the location of the rail station have separated the station from the surrounding area.

Wilshire / Vermont is a reminder of the challenge of focusing just on the transit agency land. The resulting plaza, new station entrance and ground floor retail certainly enhance the rider experience. The inward design of the TOD and big busy streets have effectively limited the integration of the station more broadly. Like Marine Gateway, transit riders are drawn through the TOD to transfer from rail to bus, thereby enhancing the rider experience.



Marine Gateway. Value capture was a critical component of paying for transit capital costs in five of the seven case studies – Fruitvale, Wilshire/Vermont, the Pearl District, Denver Union Station and Tysons.

Fruitvale punctuates the point that great proximity is insufficient on its own to integrate a TOD and transit. The failure of Fruitvale was that the design did not account for how transit riders behave. Unlike Marine Gateway and Wilshire / Vermont transit riders aren't drawn through the station resulting in little to no synergy between the station and the TOD.

Tysons is notable as the worst example among the case studies. Timing may have something to do with that, unlike Rosslyn Ballston there has been insufficient time for the stations and TOD to grow together. The location of stations on the edge of, or within major arterials means the stations are separated from

development. There is also an incomplete pedestrian network, something that can be expected to improve as more development occur at stations. An importance consequence of the separation and spotty pedestrian network is that ridership has been much lower than forecast.

Designing Transit for TOD

There is a growing recognition that focusing on moving commuters is no longer sufficient to guide transit design. In a shift from past practice, BART's 2017 Multimodal Access Design Guidelines (MADG) acknowledged that shift by among other things prioritizing pedestrian access in and around BART property, shifting its focus from commuter parking and what happens within their property.

The case studies reflect the change that has been going on in how stakeholders see transit: from people moving – to people moving + community building. Along with that shift, there has also been a change in geography for transit design: from stay within transit agency owned land - to address agency land + knit agency land physically and functionally with the community.

The projects where TOD was an early and on-going consideration in transit design decisions (Denver Union Station, the Pearl District and Rosslyn Ballston) stood out in terms of the resultant scale of TOD investments and the pedestrian-oriented car-lite lifestyle which followed.

Transit projects such as stations serving Fruitvale, Wilshire / Vermont, Tysons and Marine Gateway each reflect a historic focus on commuter trips in the design and access to the stations. In the case of Wilshire / Vermont and Marine Gateway the subsequent TOD projects served as the glue to integrate the station with the TOD, but not necessarily with the surrounding community.

Transit projects which broke the traditional design mold tended to stand out for the scale of TOD and transit use achieved

Transit Design TOD Integration

Fruitvale	TOD not considered in station design. TOD on one side and buses / parking on the other means the two don't interact. Plaza and traffic calming create a very walkable TOD, connects to community
Rosslyn Ballston	Alignment & closely spaced stations located for TOD. High level of pedestrian amenities resulted in highly integrated transit & TOD corridor. Air rights JD over bus center furthered integration
Wilshire Vermont	TOD not considered in station design. TOD frames station entrance & plaza, enhanced transit experience. Inward TOD design limits community integration, as does the bus layover next to the TOD
Pearl District	Transit designed to enable a TOD district. Closely spaced stations, calmed, walkable streets with active ground floors and a network of parks resulted in seamless integration of transit & the community
Denver Union Station	Non-traditional linear transit design to enable TOD. All 6 development blocks adjacent to transit. Regional buses underground enhances the walkability and seamless integration of TOD district and transit
Marine Gateway	TOD acts as the glue to integrate the bus center and Skytrain station. Both designed in parallel. Busy streets / station location limit transit & TOD integration with the community
Tysons	Transit alignment set for TOD. Station locations within / next to major streets and the lack of a comprehensive approach for a pedestrian network have isolated stations and limited ridership despite robust TOD

The highest level of transit and TOD integration was achieved through non-traditional transit designs where transit riders were drawn directly through the TOD. Marine Drive and Denver Union Station illustrate the benefits of having spatial separation between bus and rail interchanges to better integrate transit and the community.

Value Capture

Assessment districts and tax increment were a critical component of paying for transit capital costs in five of the seven case studies – Fruitvale, Wilshire/Vermont, the Pearl District, Denver Union Station and Tysons. In a number of cases value capture also contributed to the TOD.

In 5 of the 7 case studies tax increment and assessment districts were critical parts of paying for transit capital funding

The assessment districts established by Fairfax County for Tysons resulted in the largest total value capture contribution of the case studies. The cost estimate for the two phases of the rail project was \$5.25 billion, with about \$400 million raised through a special assessment district for phase I. An additional special assessment district is in place to contribute approximately \$330 million of phase II capital construction costs. Together the value capture contributions constitute 14% of total project costs

The initial segment of the Los Angeles Red Line (including the Wilshire/Vermont station) included two benefit assessment districts to pay for a portion of the construction costs. Together the districts raised \$130 million toward the \$1,420 million cost of the project – 9% of the total cost. Tax increment was part of the funding package for the Wilshire/Vermont TOD project.

For the Portland Streetcar’s initial line through the Pearl District included tax increment financing (\$21.5 million) and a special assessment district (\$19.4 million). Together they provided \$41million toward the \$103 million cost of the streetcar project, or 40% of total project costs.

The completed streetcar network cost \$252 million. Of that one-third of the total capital costs were funded through tax increment and special assessments, 19.6% and 13.9%, respectively.

Special assessments within five LIDs have made up approximately \$35 million, or 14%, of the Portland streetcar’s

overall capital costs. LID contributions have ranged from 10% to 33% of individual segment costs.^{1 2}

With the developer contribution model used in Vancouver, BC most of the value capture funds are never seen by the transit agency. Of the \$23.3 m (CND) in fees paid by the Marine Gateway developer just over 76% of the funds went directly to the City of Vancouver.

Value Capture			
		TOD	Transit Capital
Fruitvale	TIF for TOD and \$12 million transit parking structure	Yes	Yes
Rosslyn Ballston	\$100m for TOD alignment, tight station spacing. Developer contributions for TOD area improvements	Yes	Yes
Wilshire Vermont	Assessment for subway line, TOD and station upgrade 9% of transit capital cost	Yes	Yes
Pearl District	TIF and LID for streets, parks, streetcar 40% of transit capital cost	Yes	Yes
Denver Union Station	TIF & Metro District (property taxes) for transit and TOD infrastructure	Yes	Yes
Marine Gateway	TOD paid \$17.8m in community benefits fees and development levies to City; \$4m transit connection fee, \$1.5 for capital CND	No	Yes
Tysons	\$650m from 2 assessments, one for transit (\$400m) and roads (\$250m). 14% of transit capital cost	Yes	Yes

Assessment districts and tax increment were a critical component of paying for transit capital costs in five of the seven case studies. In a number of cases value capture also contributed to the TOD.

¹ <https://www.ssti.us/wp/wp-content/uploads/2017/10/TCRP-report-on-value-capture-editted.pdf>

² <https://www.gao.gov/new.items/d10781.pdf>

Is One Delivery Method Better for TOD?

The case studies demonstrate the type of delivery method per se was not a predictor one way or the other for achieving good TOD outcomes. That's hardly surprising since the starting point for the case studies was to slice and dice examples of good TOD. More times than not, the delivery method was secondary to the panoply plans, public policy, targeted investments, public and private leadership that underpinned achieving the TOD projects reviewed here.

It's worth noting that in some instances the type of delivery method frustrated TOD delivery (see the next section on Denver's experience with structuring P3's with and without allowing for TOD). The transit delivery methods spanned a broad spectrum:

Transit delivery methods were not a predictor for achieving good TOD outcomes.

Conventional – transit agency engages a firm to design the transit infrastructure, then a contractor to build it. Rosslyn Ballston, Fruitvale and Wilshire / Vermont used this method.

In each of those examples **Joint Development** projects on transit agency land years after the station opened was involved. In Rosslyn Ballston development happened at the initiative of the private sector along with two joint development projects (Ballston air rights over a surface bus transfer center and Court House, station connection fees).³

Transit P3 – transit agency hires a consortium to design, build and sometimes operate the transit infrastructure. Tysons and Marine Gateway used this method. Vertical development / TOD happened at the initiative of the private sector.

Transit + TOD P3 – transit agency hires a consortium to design and build the transit infrastructure as well as vertical development

3

http://udspace.udel.edu/bitstream/handle/19716/16770/2014_Ni-anQinghua_PhD.pdf?sequence=1&isAllowed=y

/ TOD on publically controled land. Denver Union Station used this method.

Master Developer Agreement – City engages into a long-term agreement for infrastructure and vertical development / TOD on privately controled land. Partial funding for parks, affordable housing and a streetcar provided in exchange for development entitlements. The Pearl District used this method.

Snapshot: Transit Delivery Method Impact on TOD

Fruitvale - Conventional delivery + JD	Groundbreaking 4-acre joint development. Transit & TOD proximity was not enough, commuters don't use the TOD. 1:1 parking replacement added a financial burden to the TOD
Rosslyn Ballston - Conventional delivery + \$100m for TOD Align	Best US example of TOD, 260-acre corridor with 5 stations. County paid to shift alignment, get stations closer together, invested in TOD planning & high pedestrian amenities. Conventional delivery
Wilshire Vermont Conventional delivery + JD	Dense joint development, 3.25-acre TOD, plaza & new station portal enhanced rider experience. TOD is isolated by project design and busy streets. Inward looking design has limited the creation of a TOD district
Pearl District - Master Developer Agreement	New 90-acre neighborhood and streetcar designed together. Master developer agreement defined developer contributions in exchange for density to help pay for the transit, parks and affordable housing
Denver Union Station - Transit + TOD P3	Real estate developer lead P3 redesigned transit for TOD & cut transit capital costs by 50%. 19-acre extension of downtown. Linear transit design, not the vertically stacked original design
Marine Gateway - Transit P3	Pedestrian retail high street and towers on 4.8-acres wrap the bus & rail station. Transit P3 team were not motivated to consider station redesign to enable better integration even with additional funding from developer
Tysons - Transit P3	TOD driven alignment, 4 stations serving 1,700-acres. Detailed TOD plan. Transit P3 team were not motivated to modify station design to better integrate with TOD, lack of walkability a major drag on ridership

Transit delivery methods where are not a predictor one way or the other for achieving good TOD outcomes. More times than not, the delivery method was secondary to the panoply plans, public policy, targeted investments, public and private leadership that underpinned achieving the TOD projects reviewed here.

Structure Transit P3's to Allow for TOD.

At first glance contracting decisions such as how to procure the design and construction of Phase II BART stations might not seem to have consequences for TOD. The case studies and transit agency experience reveals a different conclusion – the two are closely linked.

The Denver, Tysons and Marine Gateway case studies each provide different experience which provide valuable insights for BART Phase II.

Agencies using P3's such as design-build, design-build-operate-maintain while seeking to achieve high quality TOD face a common set of challenges. None of these challenges are fatal-flaws; however overcoming them requires early action, leadership and specific strategies.

In general the challenges to overcome include:

Selection Criteria. Price and contractor experience can be expected to be key factors in selecting a winning transit P3 team. Aligning cost, experience and getting a qualified vertical developer or TOD experience on transit P3 teams has proved to be problematic.

Denver Union Station overcame that by packaging TOD and transit infrastructure together and selecting a developer lead team.

Schedule and Cost Changes. P3 contracts discourage changes to plans late in the game, just the time when development plans for TOD are starting to jell. Changes to rail design plans can be very difficult to achieve and expensive.

Transit P3 contractors have little motivation to invest in doing TOD based on how solicitations are typically structured. That is a consistent theme which came up in this research. According to agency TOD staff this was a challenge with Marine Drive, Tysons and other P3's such as Denver's Eagle P3.

Transit design & TOD opportunities are typically on different time cycles – P3's need a mechanism to seize TOD opportunities without incurring major cost penalties

Value Engineer Out TOD Elements. Design-build offers the advantage of cost savings and a lower price on bid day. There is a perception that improvements important for TOD such as enhancements to the public realm are likely to be value engineered out of the project.

Schedules Don't Align. Design details are not typically completed prior to a bid; exact project components such as station access and public realm improvements critical to TOD are typically loosely defined. This has resulted in delivering station area access improvements not conducive to TOD.

The flipside is also true, defining TOD too early to align with the transit schedule risks missing the real estate market and the future price premium for transit accessibility.

In each of the P3 examples the TOD occurred after the transit project was developed via a P3. As such it's reasonable to expect the details and design of the TOD won't be known when the P3 team is selected. For two of the P3's (Marine Drive and Tysons) that lack of TOD awareness in the transit design meant the transit design was already locked in and could not respond with changes which could have better enabled TOD. For Denver Union Station the P3 included TOD and transit infrastructure.

Denver: Transit Only & Transit + TOD P3

Denver provides a useful glimpse into some of the considerations on whether or not to include TOD in a transit P3 since they have done it both ways. The transit agency has been part of three separate P3's with a transit component. For T-REX and the Eagle P3 they ultimately decided not to include TOD in the solicitation. For Denver Union Station TOD was always part of the strategy owing to the pre-planning for TOD and the scale of undeveloped land – 40 acres, 19.5 of which were owned by RTD.

- **2001 T-REX: Highway + LRT P3** a design build joint highway and transit project
- **2006 Denver Union Station: Transit + TOD P3** – a transit infrastructure plus TOD project.

- **2010 Eagle P3: Transit only** – a design-build-operate-maintain P3 for three new rail lines, with an agreement spanning 34 years.⁴

Lessons for BART Phase II

A key takeaway from Denver’s deliberations on whether or not to include TOD in a P3 is that context, timing and the scale of the TOD opportunity all matter. In the two transit only P3’s the scale of the TOD opportunities and timing issues drove decisions to exclude TOD from the P3’s. For DUS it was always clear it was a development and transit project, hence the decision to advance with a transit plus TOD P3.

Denver’s experience with multiple transit P3’s offers some usefully lessons for BART Phase II

In 2007, as part of their preparations for the Eagle P3⁵ Denver RTD carefully considered whether or not to include real estate development as part of the offering. The starting point was their own experience with Design-Build on the T-REX light rail line line. Following the delivery of T-REX the City of Denver, the contractor Kiewit Construction and RTD completed a “T-REX Transit Oriented Development: Lessons Learned Report.”⁶ The report summarized the decision not to include TOD in T-REX as follows:

“T-REX was fiscally constrained by the FTA-approved budget, the design-build process discouraged changes to plans late in the game, and the focus and expertise of the project owners and contractors was on transportation infrastructure, not vertical development. Finally, at the time T-REX was initiated in the late 1990s there was a general lack of understanding about TOD in the metro Denver market.”

⁴ <https://www.transportation.gov/policy-initiatives/build-america/eagle-p3-project-denver-co>

⁵ http://rtd-fastracks.com/main_126 .

⁶ Denver RTD, “T-REX Transit Oriented Development: Lessons Learned Report.” September 2009 <http://www.rtd-fastracks.com/media/uploads/main/TREX-TOD-LL.pdf>

RTD ultimately decided not to include TOD in the Eagle P3 design-build—operate-maintain offering. In their analysis they found there were no known “successful” US examples of combining real estate with a transit Design-Build project. Ironically, Denver Union Station (DUS) became the notable national success story that here to for had not existed.

DUS was a very different animal from T-REX and the Eagle P3. It was always clear DUS was a development and transit project. The first public steps were in 2001 when RTD acquired 19.5 vacant acres and started master planning in 2002 for a regional transportation hub. A master



Commons Park with Denver Union Station Development in the background

developer, Union Station Neighborhood Company (USNC) was selected in 2006 by five partner public agencies to deliver the transit project and act as vertical developer of DUS development sites. USNC was led by two experienced Denver developers East West Partners and Continuum. It also included the contractor from T-REX – Kiewit Construction.

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Case Studies



BART Phase II TOD

Transit Oriented Development Transit Delivery / City Shaping Case Studies





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Overview

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Two complementary questions were investigated as part of this enquiry:

1. How did transit delivery methods, station design and access enable or hinder good TOD outcomes?
2. What are the principals, key implications and lessons learned applicable to BART Phase II?

The report is organized into three sections in addition to this overview. **Case Study Snapshots** provide a high-level view, key takeaways of each case study and comparative tables; **Implications for Phase II** provides a synthesis of findings and recommendations; the report concludes with two to three-page

The case studies highlight the importance of intentionally designing and delivering Phase II BART stations to achieve people moving and city shaping as co-equal outcomes

Case Studies of each of the projects.

The TOD's examined here were selected by the consultant team and VTA for their applicability to Phase II. The delivery methods span conventional transit agency delivery, public / private partnerships (P3's), and a partnership set-out in a master developer agreement.

Looking forward to the toward the next steps of BART Phase II the case studies were assessed within a framework of asking the following questions:

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Pearl District. Assessment districts and tax increment financing were the most common types of value capture for the case studies. The \$400 million raised in Tysons for transit capital was the largest dollar total, while the \$41 million raised for the Portland streetcar was the largest share – 41%

Overview of Case Studies

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Richmond BART is an example of a joint development project with a new transit plaza, station entrance, pedestrian spine and moderate density for-sale housing. Image: BART

Case Studies Snapshots

For Phase II BART stations the case studies are illustrative in that they examine a range of situations, timeframes and approaches in using transit as a city shaping tool. While they vary in terms of scale, timing and design in transit delivery methods, they share a common objective in leveraging transit to shape growth and capture value. In doing that they reinforce the old proverb – *there is more than one way to skin a cat*.

For more details on the case studies see the individual case studies at the end of this report. A separate report “Transit Oriented Development TOD Planning / Public Policy Case Studies” goes more deeply into the planning framework for each of the TODs.

The case studies span more than 40 years of linking transit and land use. In that period there have been some fundamental shifts in how stakeholders see transit:

- From transit being exclusively about people moving, to evolving to people moving and city shaping being co-

The case studies share a common objective – the desire to leverage transit to shape growth and capture value – each did it in a different way

equal objectives.

- The emergence of city shaping as an objective has necessitated a change in geography – from staying inside the transit ROW to addressing agency land plus knitting agency land physically and functionally with the community.
- And, pursuing city shaping has changed who is at the table and the roles played to achieve the desired outcomes – more and more partnerships, both public public and public private.

The implication for VTA’s Phase II BART stations is that focusing on moving commuters is no longer sufficient. The stations need to be designed and delivered with city shaping and people moving in mind. Borrowing from best practice within the case studies suggests the Phase II stations can meet the changing needs of its riders, the community and its partners by simultaneously achieving three complementary objectives:

- Create a place
- Connect to the community
- Make transit work

While each of the TOD’s provides some important successes the key lessons for VTA lie in what could have been done differently to overcome some of the critical barriers to success:

Fruitvale BART, Oakland – conventional transit joint development.

The project was hampered by BART’s requirement to replace surface parking in a structure and the lack of transit placemaking. The city rezoned and helped fund the TOD. Transit design unintentionally resulted in a split project, limited synergy between the TOD and station. The cost of replacement parking was a



Portland’s Pearl District, like Denver Union Station and the Rosslyn Ballston Corridor are excellent examples of simultaneously linking transit design and land use planning to create vibrant new transit-oriented communities. While the objective was the same, the transit delivery method in each instance was different.

major financial hurdle to overcome.

Takeaway: A groundbreaking 4-acre joint development. Transit and TOD proximity was not sufficient, commuters went directly to their next mode and didn't use the TOD. BART's 1:1 parking replacement added a major financial burden to the TOD.

Rosslyn Ballston – 40-year comprehensive strategy.

The five-station corridor is arguably the best example of TOD in the Country. Planning for TOD started with the county paying \$100 million (1975\$) to change the design and include five closely spaced subway stations away from the planned freeway alignment. The strategy included adopting TOD plans, zoning and a neighborhood compact to preserve them. The result is a vibrant pedestrian corridor. Between 1970 and 2011 the 260-acre corridor has seen impressive transit-oriented growth: +74,000 jobs, +22,400 residents and +16.4 million SF of office. Only 30% of residents in the corridor drive to work. 76.7% of Metro access is walking.



The Rosslyn Ballston Corridor has become America's best TOD as the result of intentionality – of transit design for TOD, supportive planning, investing in high quality pedestrian amenities and a strategy of high-density near stations while committing to preserve single-family neighborhoods.

Takeaway: Outstanding TOD District. A 260-acre corridor with 5 stations. County paid to shift alignment, get stations closer together, invested in TOD planning and high pedestrian amenities. Conventional delivery.

Wilshire/Vermont, Los Angeles – conventional transit joint development.

A pioneering Los Angeles residential, retail and public school TOD built over two rail lines. The project is organized around a new plaza and station entrance. The TOD retail and plaza enhanced the transit rider experience. The inward-looking design of the TOD limited the creation of a larger TOD district. The project performs well as a TOD, generating 57% fewer auto trips relative to Institute of Traffic Engineers rates.

Takeaway: Good freestanding TOD. Dense joint development, 3.25-acre TOD, plaza & new station portal enhanced rider experience. TOD is isolated by project design and busy streets. Inward looking design and adjacent bus layover has limited the creation of a TOD district.



Wilshire/Vermont. Joint development played an important role in enhancing the transit rider experience at both Wilshire/Vermont and Fruitvale.

Pearl District, Portland, OR – 25-year comprehensive strategy

The Pearl District is Portland's largest and most successful new mixed-use neighborhood. The 90-acre district adjacent to downtown Portland is organized around a streetcar line designed for TOD. A long-term city/developer master agreement delivered three parks, narrow streets, affordable housing and the streetcar in exchange for more density. Formerly 16 units per acre was the maximum, the minimum density today is 131 DU per acre. In the Pearl 58% of work trips are non-auto and 22% of the units are affordable.

Takeaway: Outstanding TOD district. A new 90-acre neighborhood and streetcar designed together. Master developer agreement defined developer contributions in exchange for density to help pay for the transit, parks and affordable housing. Highly integrated TOD and transit. The product of a master developer agreement and designed around transit, the Pearl is a guide for creating walkable, transit-oriented places.

Denver Union Station – 19.5-acre transit & TOD P3

The 19-acre project includes a major new downtown district and a new multi-modal station serving as the hub of Denver’s regional transit system. A real estate developer lead P3 team modified the transit design to cut the costs by 50% and maximize TOD. The commuter rail, light rail and bus transit center are laid out linearly and seamlessly integrated with the TOD. The P3 team delivered TOD on 6 blocks plus the transit infrastructure. Five partner governments oversaw the project. New TIF and assessment districts were created. Buildout has been years faster than expected. The P3 is part of larger 40-acre redevelopment project which also includes the historic train station.

Takeaway: Outstanding TOD district. Real estate developer lead P3 redesigned transit for TOD and cut transit capital costs by 50%. 19.5-acre extension of downtown. Breaking the mold on traditional transit design with a linear transit design allowed excellent integration, lower transit costs and an exemplary TOD.

Marine Gateway, Vancouver, BC – private TOD integrated with station

Vancouver’s first suburban mixed-use TOD. The project seamlessly integrates a pedestrian retail high street below three residential and office towers with a Skytrain station and a major bus transit center. The TOD resulted in a 30% ridership increase. The transit P3 limited a better station connection. The station is separated from neighborhood by busy streets and the placement of the station. The TOD is part of a district TOD plan.

Takeaway: Outstanding TOD. Pedestrian retail high street and towers on 4.8-acres are integrated with the bus and rail stations. The transit P3 team were not motivated to consider station



Marine Gateway. Value capture was a critical component of paying for transit capital costs in five of the seven case studies – Fruitvale, Wilshire/Vermont, the Pearl District, Denver Union Station and Tysons.

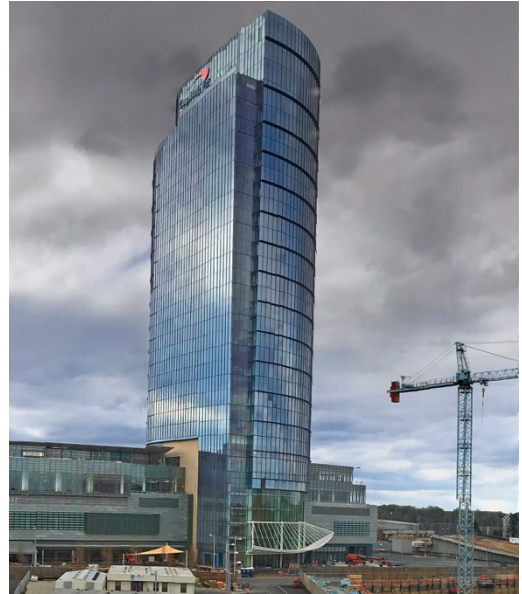
redesign to enable better integration even with additional funding from the developer.

Tysons, Northern Virginia – emerging 1,700-acre TOD district

The transit alignment and 4 stations were set for TOD. Unfortunately, the transit P3 and the state DOT frustrated station integration. New TOD zoning and billions in new development has not resulted in expected ridership.

Locating stations in auto-oriented places and the lack of a comprehensive approach to make station areas walkable has hampered transit use.

Takeaway: A work in progress. Like BART Phase II, Tysons demonstrates the challenge of incrementally retrofitting an automobile-oriented center into walkable mixed-use urban places. Despite a TOD driven alignment, billion's in new development consistent with TOD zoning the transit P3 team was not motivated to modify station design to better integrate with TOD, the resultant lack of walkability has been a major drag on ridership



Capital One Headquarters from Mclean Station Tysons. The Washington regions tallest office tower rises across from one of four stations. Tysons remains a work in progress.



New Lynn Station, Greater Auckland, NZ. The station was redesigned to reconnect to a community separated by train tracks and to anchor a dense TOD mixed-use district.

Implications for Phase II

The case studies offer important lessons learned for the BART Phase II extension. In narrative and a series of comparison matrixes this section starts with a review of the finding for how ‘good TOD’ outcomes were impacted by transit design, site scale, transit delivery methods and the timing of the transit investment relative to when the transit was delivered. The role of value capture in the case summarized and recommendations for Phase II are outlined.

The implication for Phase II stations is that focusing on moving commuters is no longer sufficient. Twenty first century stations need to be designed and delivered with city shaping and people moving in mind. Borrowing from best practice within the case studies suggests the Phase II stations can meet the changing needs of riders, the community and partners by simultaneously achieving three complementary objectives:

- Make transit work
- Create a place
- Connect to the community

21st stations
need to be designed
& delivered with
city shaping &
people moving in mind
– that has important
implications for
BART Phase II

Station and TOD Integration

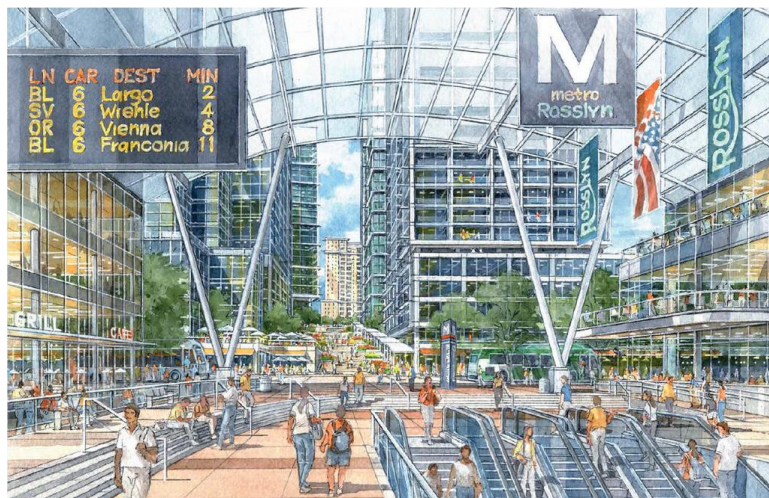
Transit agencies have come to realize the integration of stations, TOD and the surrounding community have a material effect on the success of the transit system. As stations such as Berryessa and some of the case studies illustrate, that has not always been the case.

TOD delivers more riders at a lower cost than transit parking at densities of 60 units per acre

The case studies span more than 40 years of linking transit and land use and a variety of approaches for integrating transit and TOD. In that period there have been a fundamental shift in how stakeholders see transit. Transit has gone from being exclusively about people moving, to evolving to people moving and city shaping being co-equal objectives. Solving for those dual objectives has some important implications for how station access, placemaking and connecting stations to the community is handled.

The approach and outcomes relative to station and TOD integration not surprisingly vary considerably:

Through the passage of time the **Rosslyn Ballston** corridor stations have become better integrated with the community, much like a spreading plant might grow into and around the station. While the stations were located to shape growth they also reflect the urban design of another era when stations were apart from the community. In response the new Rosslyn sector plan features a new station upgrade consequently and connecting it to a new pedestrian spine.



New Rosslyn Station entrance connecting to a pedestrian spine. Image: Arlington County.

Denver Union Station and the **Pearl District** are excellent examples of what can happen when the TOD and the transit are designed together. The stations, TOD streets, open spaces and active ground floors are seamlessly integrated resulting in a high degree of transit use and walk trips.

Marine Gateway stands out as the best example of an after the station opened integration of station and TOD. Offsetting the bus transit center from the rail station allowed the TOD team to design a project which draws transit users through the TOD. Like Rosslyn Ballston, the development spread around and enveloped the station. On the other hand, busy streets and the location of the rail station have separated the station from the surrounding area.

Wilshire / Vermont is a reminder of the challenge of focusing just on the transit agency land. The resulting plaza, new station entrance and ground floor retail certainly enhance the rider experience. The inward design of the TOD and big busy streets have effectively limited the integration of the station more broadly. Like Marine Gateway, transit riders are drawn through the TOD to transfer from rail to bus, thereby enhancing the rider experience.



Fruitvale punctuates the point that great proximity is insufficient on its own to integrate a TOD and transit. The failure of Fruitvale was that the design did not account for how transit riders behave. Unlike Marine Gateway and Wilshire / Vermont transit riders aren't drawn through the station resulting in little to no synergy between the station and the TOD.

Fruitvale is a stark reminder that the efficiency of traditional transit design can frustrate the integration of transit, community and placemaking. Image: BART.

Tysons is notable as the worst example among the case studies. Timing may have something to do with that, unlike Rosslyn Ballston there has been insufficient time for the stations and TOD to grow together. The location of stations on the edge of, or within major arterials means the stations are separated from

Station and Community Integration				
Station	Land Use Mix	Acres	Integrated w/ Community	Station + TOD Activation
Fruitvale	Community Office, residential, retail	4	Proximity not integration	Plaza + active ground floor
Rosslyn Ballston	Office, Residential, Grocery, Regional retail	260	40-year evolution grown together	Grown around stations
Wilshire Vermont	Residential, school, local serving retail	3.24	Inward looking separated	Limited activation
Pearl District	Office, Residential, Grocery, local retail	90	Seamless integration	Parks + active ground floor
Denver Union Station	Office, Residential, Grocery, local retail	19	Seamless integration	Plazas + active ground floor
Marine Gateway	Office, Residential, Grocery, local retail	4.8	Seamless integration	High street w/ station
Tysons	Office, Residential, Grocery, regional retail	1,700	Separated	Remains auto-oriented

Denver Union Station, the Pearl District and Marine Gateway stand out as the best examples of integrating stations with the community. Each benefited from early TOD planning, a strong development market, a growing transit system and an understanding from local government and the development community of the value of transit served locations.

development. There is also an incomplete pedestrian network, something that can be expected to improve as more development occur at stations. An importance consequence of the separation and spotty pedestrian network is that ridership has been much lower than forecast.

Designing Transit for TOD

There is a growing recognition that focusing on moving commuters is no longer sufficient to guide transit design. In a shift from past practice, BART's 2017 Multimodal Access Design Guidelines (MADG) acknowledged that shift by among other things prioritizing pedestrian access in and around BART property, shifting its focus from commuter parking and what happens within their property.

The case studies reflect the change that has been going on in how stakeholders see transit: from people moving – to people moving + community building. Along with that shift, there has also been a change in geography for transit design: from stay within transit agency owned land - to address agency land + knit agency land physically and functionally with the community.

The projects where TOD was an early and on-going consideration in transit design decisions (Denver Union Station, the Pearl District and Rosslyn Ballston) broke the traditional transit design mold. They also stood out in terms of the resultant scale of TOD investments and the pedestrian-oriented car-lite lifestyle which followed. For these stations the line between transit agency land and the surrounding community have been blurred as the stations and the community have grown together.

Transit projects such as stations serving Fruitvale, Wilshire / Vermont, Tysons and Marine Gateway each reflect a historic focus on commuter trips in the design and access to the stations. In the case of Wilshire / Vermont and Marine Gateway the subsequent TOD projects served as the glue to integrate the station with the TOD, but not necessarily with the surrounding community.

Transit projects which broke the traditional design mold tended to stand out for the scale of TOD and transit use achieved

Transit Design TOD Integration	
Fruitvale	TOD not considered in station design. TOD on one side and buses / parking on the other means the two don't interact. Plaza and traffic calming create a very walkable TOD, connects to community
Rosslyn Ballston	Alignment & closely spaced stations located for TOD. High level of pedestrian amenities resulted in highly integrated transit & TOD corridor. Air rights JD over bus center furthered integration
Wilshire Vermont	TOD not considered in station design. TOD frames station entrance & plaza, enhanced transit experience. Inward TOD design limits community integration, as does the bus layover next to the TOD
Pearl District	Transit designed to enable a TOD district. Closely spaced stations, calmed, walkable streets with active ground floors and a network of parks resulted in seamless integration of transit & the community
Denver Union Station	Non-traditional linear transit design to enable TOD. All 6 development blocks adjacent to transit. Regional buses underground enhances the walkability and seamless integration of TOD district and transit
Marine Gateway	TOD acts as the glue to integrate the bus center and Skytrain station. Both designed in parallel. Busy streets / station location limit transit & TOD integration with the community
Tysons	Transit alignment set for TOD. Station locations within / next to major streets and the lack of a comprehensive approach for a pedestrian network have isolated stations and limited ridership despite robust TOD

The highest level of transit and TOD integration was achieved through non-traditional transit designs where transit riders were drawn directly through the TOD. Marine Drive and Denver Union Station illustrate the benefits of having spatial separation between bus and rail interchanges to better integrate transit and the community.

Is One Delivery Method Better for TOD?

The case studies demonstrate the type of delivery method per se was not a predictor one way or the other for achieving good TOD outcomes. That's hardly surprising since the starting point for the case studies was to slice and dice examples of good TOD. More times than not, the delivery method was secondary to the panoply plans, public policy, targeted investments, public and private leadership that underpinned achieving the TOD projects reviewed here.

Transit delivery methods were not a predictor for achieving good TOD outcomes.

It's worth noting that in some instances the type of delivery method frustrated TOD delivery (see the next section on Denver's experience with structuring P3's with and without allowing for TOD). The transit delivery methods spanned a broad spectrum:

- **Conventional** – transit agency engages a firm to design the transit infrastructure, then a contractor to build it. Rosslyn Ballston, Fruitvale and Wilshire / Vermont used this method.

In each of those examples **Joint Development** projects on transit agency land years after the station opened was involved. In Rosslyn Ballston development happened at the initiative of the private sector along with two joint development projects (Ballston air rights over a surface bus transfer center and Court House, station connection fees).¹

- **Transit P3** – transit agency hires a consortium to design, build and sometimes operate the transit infrastructure. Tysons and Marine Gateway used this method. Vertical development / TOD happened at the initiative of the private sector.

1

http://udspace.udel.edu/bitstream/handle/19716/16770/2014_NiAnQinghua_PhD.pdf?sequence=1&isAllowed=y

- **Transit + TOD P3** – transit agency hires a consortium to design and build the transit infrastructure as well as vertical development / TOD on publically controlled land. Denver Union Station used this method.
- **Master Developer Agreement** – City engages into a long-term agreement for infrastructure and vertical development / TOD on privately controlled land. Partial funding for parks, affordable housing and a streetcar provided in exchange for development entitlements. The Pearl District used this method.

Snapshot: Transit Delivery Method Impact on TOD

Fruitvale - Conventional delivery + JD	Groundbreaking 4-acre joint development. Transit & TOD proximity was not enough, commuters don't use the TOD. 1:1 parking replacement added a financial burden to the TOD
Rosslyn Ballston - Conventional delivery + \$100m for TOD Align	Best US example of TOD, 260-acre corridor with 5 stations. County paid to shift alignment, get stations closer together, invested in TOD planning & high pedestrian amenities. Conventional delivery
Wilshire Vermont Conventional delivery + JD	Dense joint development, 3.25-acre TOD, plaza & new station portal enhanced rider experience. TOD is isolated by project design and busy streets. Inward looking design has limited the creation of a TOD district
Pearl District - Master Developer Agreement	New 90-acre neighborhood and streetcar designed together. Master developer agreement defined developer contributions in exchange for density to help pay for the transit, parks and affordable housing
Denver Union Station - Transit + TOD P3	Real estate developer lead P3 redesigned transit for TOD & cut transit capital costs by 50%. 19-acre extension of downtown. Linear transit design, not the vertically stacked original design
Marine Gateway - Transit P3	Pedestrian retail high street and towers on 4.8-acres wrap the bus & rail station. Transit P3 team were not motivated to consider station redesign to enable better integration even with additional funding from developer
Tyson's - Transit P3	TOD driven alignment, 4 stations serving 1,700-acres. Detailed TOD plan. Transit P3 team were not motivated to modify station design to better integrate with TOD, lack of walkability a major drag on ridership

Transit delivery methods where are not a predictor one way or the other for achieving good TOD outcomes. More times than not, the delivery method was secondary to the panoply plans, public policy, targeted investments, public and private leadership that underpinned achieving the TOD projects reviewed here.

Structure Transit P3's to Allow for TOD.

At first glance contracting decisions such as how to procure the design and construction of Phase II BART stations might not seem to have consequences for TOD. The case studies and transit agency experience reveals a different conclusion – the two are closely linked.

The Denver, Tysons and Marine Gateway case studies each provide different experience which provide valuable insights for BART Phase II.

Agencies using P3's such as design-build, design-build-operate-maintain while seeking to achieve high quality TOD face a common set of challenges. None of these challenges are fatal-flaws; however overcoming them requires early action, leadership and specific strategies.

In general the challenges to overcome include:

Selection Criteria. Price and contractor experience can be expected to be key factors in selecting a winning transit P3 team. Aligning cost, experience and getting a qualified vertical developer or TOD experience on transit P3 teams has proved to be problematic.

Denver Union Station overcame that by packaging TOD and transit infrastructure together and selecting a developer lead team.

Schedule and Cost Changes. P3 contracts discourage changes to plans late in the game, just the time when development plans for TOD are starting to jell. Changes to rail design plans can be very difficult to achieve and expensive.

Transit P3 contractors have little motivation to invest in doing TOD based on how solicitations are typically structured. That is a consistent theme which came up in this research. According to agency TOD staff this was a challenge with Marine Drive, Tysons and other P3's such as Denver's Eagle P3.

Transit design & TOD opportunities are typically on different time cycles – P3's need a mechanism to seize TOD opportunities without incurring major cost penalties

Value Engineer Out TOD Elements. Design-build offers the advantage of cost savings and a lower price on bid day. There is a perception that improvements important for TOD such as enhancements to the public realm are likely to be value engineered out of the project.

Schedules Don't Align. Design details are not typically completed prior to a bid; exact project components such as station access and public realm improvements critical to TOD are typically loosely defined. This has resulted in delivering station area access improvements not conducive to TOD.

The flipside is also true, defining TOD too early to align with the transit schedule risks missing the real estate market and the future price premium for transit accessibility.

In each of the P3 examples the TOD occurred after the transit project was developed via a P3. As such it's reasonable to expect the details and design of the TOD won't be known when the P3 team is selected. For two of the P3's (Marine Drive and Tysons) that lack of TOD awareness in the transit design meant the transit design was already locked in and could not respond with changes which could have better enabled TOD. For Denver Union Station the P3 included TOD and transit infrastructure.

Denver: Transit Only & Transit + TOD P3

Three of the case studies involved delivering transit as part of a P3. As was discussed earlier, the P3 for Tysons and Vancouver did not include TOD in the solicitation. And in both in cases, the P3 partners were not motivated to modify earlier transit designs when opportunity arose to maximize TOD. A key takeaway from Denver's deliberations on whether or not to include TOD in a P3 is that context, timing and the scale of the TOD opportunity all matter. In the two transit only P3's the scale of the TOD opportunities and timing issues drove decisions to exclude TOD from the P3's. For DUS it was always clear it was a development and transit project, hence the decision to advance with a transit plus TOD P3.

Denver provides a useful glimpse into some of the considerations on whether or not to include TOD in a transit P3 since they have done it both ways. The transit agency has been part of three separate P3's with a transit component. For T-REX and the Eagle P3 they ultimately decided not to include TOD in the solicitation. For Denver Union Station TOD was always part of the strategy owing to the pre-planning for TOD and the scale of undeveloped land – 40 acres, 19.5 of which were owned by RTD.

- **2001 T-REX: Highway + LRT P3** a design build joint highway and transit project
- **2006 Denver Union Station: Transit + TOD P3** – a transit infrastructure plus TOD project.
- **2010 Eagle P3: Transit only** – a design-build-operate-maintain P3 for three new rail lines, with an agreement spanning 34 years.²

Lessons for BART Phase II

A key takeaway from Denver's deliberations on whether or not to include TOD in a P3 is that context, timing and the scale of the TOD opportunity all matter.

In 2007, as part of their preparations for the Eagle P3³ Denver RTD carefully considered whether or not to include real estate development as part of the offering. The starting point was their own experience with Design-Build on the T-REX light rail line. Following the delivery of T-REX the City of Denver, the contractor Kiewit Construction and RTD completed a "T-REX Transit Oriented

Denver's experience
with multiple transit
P3's offers some
usefully lessons for
BART Phase II

² <https://www.transportation.gov/policy-initiatives/build-america/eagle-p3-project-denver-co>

³ http://rtd-fastracks.com/main_126 .

Development: Lessons Learned Report.”⁴ The report summarized the decision not to include TOD in T-REX as follows:

“T-REX was fiscally constrained by the FTA-approved budget, the design-build process discouraged changes to plans late in the game, and the focus and expertise of the project owners and contractors was on transportation infrastructure, not vertical development. Finally, at the time T-REX was initiated in the late 1990s there was a general lack of understanding about TOD in the metro Denver market.”

RTD ultimately decided not to include TOD in the Eagle P3 design-build—operate-maintain offering. In their analysis they found there were no known “successful” US examples of combining real estate with a transit Design-Build project. Ironically, Denver Union Station (DUS) became the notable national success story that here to for had not existed.

DUS was a very different animal from T-REX and the Eagle P3. It was always clear DUS was a development and transit project. The genesis of the project came when a Seattle Developer, Trillium lead an initiative to acquire, clean-up and redevelop the Union Station railyards into a



Commons Park with Denver Union Station Development in the background

high-density district. The project took a turn in 2001 when RTD acquired 19.5 vacant acres and started master planning in 2002

⁴ Denver RTD, “T-REX Transit Oriented Development: Lessons Learned Report.” September 2009 <http://www.rtd-fastracks.com/media/uploads/main/TREX-TOD-LL.pdf>

for a regional transportation hub. A master developer, Union Station Neighborhood Company (USNC) was selected in 2006 by five partner public agencies to deliver the transit project and act as vertical developer of DUS development sites. USNC was led by two experienced Denver developers East West Partners and Continuum. It also included the contractor from T-REX – Kiewit Construction.

With Denver Union Station the P3 team was led by real estate developers and included both transit delivery and TOD. The Denver team was able to reduce the transit cost by 50% and maximize TOD with a revised transit design.

Value Capture

Assessment districts and tax increment were a critical component of paying for transit capital costs in five of the seven case studies – Fruitvale, Wilshire/Vermont, the Pearl District, Denver Union Station and Tysons. In a number of cases value capture also contributed to the TOD.

The assessment districts established by Fairfax County for **Tysons** resulted in the largest total value capture contribution of the case studies. The cost estimate for the two phases of the rail project is \$5.25 billion, with about \$400 million raised through a special assessment district for phase I. An additional special assessment district is in place to contribute approximately \$330 million of phase II capital construction costs. Together the value capture contributions constitute 14% of total project costs

The initial segment of the Los Angeles Red Line (including the **Wilshire/Vermont** station) included two benefit assessment districts to pay for a portion of the construction costs. Together the districts raised \$130 million toward the \$1,420 million cost of the project – 9% of the total cost. Tax increment was part of the funding package for the Wilshire/Vermont TOD project.

For the Portland Streetcar's initial line through the **Pearl District** included tax increment financing (\$21.5 million) and a special

In 5 of the 7 case studies tax increment and assessment districts were critical parts of paying for transit capital funding

assessment district (\$19.4 million). Together they provided \$41million toward the \$103 million cost of the streetcar project, or 40% of total project costs.

The completed streetcar network cost \$252 million. Of that one-third of the total capital costs were funded through tax increment and special assessments, 19.6% and 13.9%, respectively.

Special assessments within five LIDs have made up approximately \$35 million, or 14%, of the Portland streetcar's overall capital costs. LID contributions have ranged from 10% to 33% of individual segment costs.^{5 6}

With the developer contribution model used in Vancouver, BC most of the value capture funds are never seen by the transit agency. Of the \$23.3 m (CND) in fees paid by the **Marine Gateway** developer just over 76% of the funds went directly to the City of Vancouver.

⁵ <https://www.ssti.us/wp/wp-content/uploads/2017/10/TCRP-report-on-value-capture-editted.pdf>

⁶ <https://www.gao.gov/new.items/d10781.pdf>

Value Capture		TOD	Transit Capital
Fruitvale	TIF for TOD and \$12 million transit parking structure	Yes	Yes
Rosslyn Ballston	\$100m for TOD alignment, tight station spacing. Developer contributions for TOD area improvements	Yes	Yes
Wilshire Vermont	Assessment for subway line, TIF for TOD and station upgrade. Assessment 9% of transit capital cost	Yes	Yes
Pearl District	TIF and LID for streets, parks, streetcar 40% of transit capital cost	Yes	Yes
Denver Union Station	TIF & Metro District (property taxes) for transit and TOD infrastructure	Yes	Yes
Marine Gateway	TOD paid \$17.8m in community benefits fees and development levies to City; \$4m transit connection fee, \$1.5 for capital CND	No	Yes
Tysons	\$650m from 2 assessments, one for transit (\$400m) and roads (\$250m). 14% of transit capital cost	Yes	Yes

Assessment districts and tax increment were a critical component of paying for transit capital costs in five of the seven case studies. In a number of cases value capture also contributed to the TOD.



Fruitvale. Images left to right. Left: Walking from TOD to station, guideway & station far left; Top: station from TOD paseo; Aerial view of TOD, station, transit center and parking garage. Below: view of TOD from BART station.

Fruitvale Transit Village

Fruitvale Village was the first example of equitable TOD in the United States. The project was created through the redevelopment of a surface transit parking lot next to the Fruitvale BART station in Oakland, CA. Initially, BART had planned to build a parking garage on the lot. The TOD includes 47 residential units (10 are affordable) 40,000 SQ FT of retail and 135,000 SQ FT of Office (115,000 for non-profits). The TOD is immediately adjacent to the station and features a paseo lined with storefronts, that provide an inviting connection between the neighborhood and the station, and a safe, new public space for events and street vendors. Phase II of the village is currently under construction. In addition to the TOD, the project includes a new bus transfer center and a replacement parking in a structure with 1268 spaces. The transit center services multiple AC Transit bus routes, taxi cabs, and a “kiss and ride” pick-up and drop-off station. The BART station opened in 1972 and has just under 7,000 exits a day.

Fruitvale provides a lesson for all TODs – proximity is not enough to achieve synergy between the station and a TOD

Integration Challenges

Fruitvale provides some important lessons for other mixed-use TOD projects.

1. **Proximity is not sufficient.** Proximity to a mixed use TOD is not enough at a transit stop. Despite best intentions to integrate the TOD with the BART station at Fruitvale, the station and the TOD operate independently of each other without the hoped-for synergy. Commuters who use the station go directly to the transit center or the park-n-ride without frequenting the retail.
2. **Introduce friction.** Designers could learn from grocery stores who put popular items like milk in the back of the store to get shoppers to walk past other goods. If they had it to do over again, the Fruitvale transit center / commuter parking would have been located in such a way that transit riders would be funneled past the TOD retail to on their way to the transit center and commuter parking. Thereby enhancing the rider experience and TOD performance.
3. **Replacement parking was a financial burden.** Many of BART's previous policies such as requiring 1:1 replacement parking at all stations have been updated which should result in better TOD outcomes.



Rosslyn Ballston Corridor. Images left to right. Top: The five high density stations are less than ½ mile apart to encourage walking, single family neighborhoods are protected; 76.7% of access to Metro is by walking. Below: Many stations such as Clarendon have been upgraded; Air rights development over the Ballston station and transit center.

Rosslyn Ballston

Virginia’s Rosslyn Ballston (RB) corridor is arguably the best example of TOD in the Country. Planning for TOD started with the county paying \$100 million (1975\$) to change the rail alignment and include five closely spaced subway stations away from the planned freeway alignment. The strategy included adopting TOD plans, new zoning and a neighborhood compact to preserve the single family neighborhoods.⁷

The project is notable in part because it demonstrates the value of having and sticking with a long-term integrated transit and land use strategy. The result is a vibrant pedestrian-

By designing transit and TOD together Rosslyn Ballston became America’s best TOD with +74,000 new jobs and +22,400 residents in the corridor.

⁷ Top left image source: Fairfax County; Lower left source: Anomadslife.com

oriented TOD corridor. Between 1970 and 2011 the corridor has seen impressive transit-oriented growth: +74,000 jobs, +22,400 residents and +16.4 million SF of office. Only 30% of residents in the corridor drive to work. 76.7% of Metro access is walking.

Integration Challenges

Retrofitting stations. Through the passage of time the five stations have become better integrated with the community, much like a spreading plant might grow into and around the station. While the stations were located to shape growth, they also reflect the urban design of another era when stations were apart from the community. An early air rights joint development project over the Ballston transit center resulted in a 28-story tower plus the transit center.

Urban design given insufficient attention initially. Early development results did not work from a place making perspective. The county made a “Mid-Course Review” in 1989 and instituted a corridor wide urban design strategy with sector plans. “The critical lesson was that it’s not about the density, it’s about the form, and what place we were trying to create.”

Design transit for TOD. The corridor is notable in part because transit design broke the mold of conventional transit design – to encourage a walkable district the stations were placed close together (every ½ mile verse 2 miles); and the alignment was shifted from a freeway median to declining arterials in order to spur redevelopment.



Wilshire Vermont. Images left to right. Top: New station entrance within the TOD; Riders leaving station thru plaza framed by TOD; View into TOD at night from Wilshire Blvd; TOD from across Wilshire and Vermont Blvd. Below: Wilshire Rapid bus stop on Wilshire next to TOD; TOD retail and plaza.

Wilshire Vermont

Wilshire/Vermont is a pioneering Los Angeles joint development project built on transit agency land over two rail lines. Two high frequency Metro Rapid buses and nine local buses stop along the curb of the TOD on both Wilshire and Vermont. The station opened in 1993 and the TOD in 2007. The joint development includes residential, retail and a public school. Given low incomes in the community and uncertainty about dealing with the transit agency only four developers submitted development proposals. The project includes a new subway portal and elevator access. The TOD frames the station

LA Metro staff concede that the design of the TOD is not consistent with current objectives for transit-oriented communities

and a plaza, both of which enhance the transit rider experience. Daily station boardings in 2014 were 12,472.⁸

The design of the project gestures to the corner of Wilshire & Vermont with an opening to the plaza framed with ground floor retail. The outward face of the project along Vermont presents a hard edge of blank walls to the street. Ground floor occupies the frontage along Wilshire. The project itself is oriented inwardly toward the plaza and the station entrance.

Integration Challenges

1. **Enhanced rider experience.** The combination of the portal entrance onto the plaza, the plaza retail and a clear sight line between the station and the Wilshire bus station make for a safe, active environment.
2. **Inward looking design.** The project reflects the inward-looking design of other first-generation Los Angeles TOD projects. As a result, the project has yet to create a TOD district. Like the rest of the Wilshire Corridor the station area is a mix of high density auto-dependent development and low density auto-oriented uses. To the west on the corner of Wilshire and Vermont is a gas station and a 7-11. A major new mixed-use residential project with two 17-story towers with 6 levels of parking was completed directly across Wilshire in 2014.
3. **Confused bus design.** On one hand, the bus rail interface is very urban with 11 lines stopping on the street corner including two high frequency Metro Rapid lines. On the other hand, just east of the TOD on Wilshire is an off-street 11 bus layover on a half block of highly developable land.

⁸ Image Source top right: Metro; Metro staff quote phone call with Nick Saponara Deputy Executive Officer, Transit Oriented Communities at LA Metro



Pearl District. Images left to right. Top: The latest generation of development, Portland’s tallest residential tower; wide sidewalks and streetcars in mixed traffic; Jamison Square, one of three new parks in the Pearl; Streetcar. Below: Active ground floors typify development in the Pearl; Tanner Creek Park & residential buildings.

Pearl District

Portland’s Pearl District is a shining example of the transformative power of transportation, supportive public policy, sustained public private partnerships and market demand for walkable urban places. In 2008, 58 percent of residents reported using modes other than driving to get to work.

The Pearl District is a 90-acre new urban neighborhood organized around a streetcar line designed for TOD. From the beginning the Portland Streetcar has always more about community building than people moving. That said, ridership on the streetcar is high, in April 2018 it averaged 16,500 daily rides. Redevelopment of the former railyard has been guided by a long-term city/developer master agreement. The agreement delivered three parks, narrow streets and the streetcar in exchange for increasing density. After starting with a maximum of 16 units per acre, the minimum density is now 131 DU per acre. Some 22% of the units are affordable.

The Pearl is an exemplary example of a long-term public-private collaboration designing a new district and transit around each other.

Integration Challenges

1. **Master Developer Agreement.** The development agreement defined clear public and private roles and responsibilities for funding parks, transportation and affordable housing and resulted in the delivery of a district of high amenity walkable urban development oriented to the new streetcar line.
2. **Transit design well integrated.** Unlike BART stations, the streetcar stops are more akin to a bus stop. That enabled the streetcar to be seamlessly integrated into the urban fabric of the Pearl District.



Denver Union Station. Images left to right. Top: Pedestrian plaza and TOD next to the historic trains station at the top of the project; Part of the 10-acers of plazas and open space. Below: Dense TOD frames open space above an underground bus transit center; Light Rail station anchors the back of the project.

Denver Union Station

Denver Union Station is a 19.5-acre TOD and a new multi-modal station serving as the hub of Denver's regional transit system. A real estate developer lead P3 team was selected deliver TOD on 6 blocks plus the transit infrastructure. The team secured approval to modify the transit design to cut the costs by 50% and maximize TOD. The commuter rail, light rail and bus transit center are laid out linearly and seamlessly integrated with the TOD. Five partner governments oversaw the project.⁹

The 19.5-acre TOD and Denver's new intermodal transit hub were designed and delivered together by a real estate developer led P3 team

Funding for the project included new tax increment and assessment districts to repay Transportation Finance and Innovation Act (TIFIA) and Railroad Rehabilitation and Improvement Finance (RRIF) program loans. Buildout has been years faster than expected. The P3 is part of larger 40-acre

⁹ Image source: Hargreaves (all but lower right)

redevelopment project which also includes the historic train station.

Integration Challenges

Before the P3 team was selected the site went through a two-year master planning process to complete an initial design for the transit improvements, prepare cost estimates and to rezone the site for high density TOD. Redevelopment of the historic Denver Union Station was pulled out of the P3 and done through a separate solicitation.

1. **Non-traditional transit design.** The transit design developed through the master planning process included a multi-modal vertically stacked design allowing for close connections between LRT, regional buses, the Mall Shuttle and commuter rail. To close a significant unfunded gap the P3 team proposed a linear solution spreading transit across the site and reducing capital costs by 50%.
2. **Linear Transit Design.** The design resulted in a vibrant pedestrian oriented downtown district with a linear park above the underground regional bus station. The influence of transit is spread across the site. Connections between buses and rail are direct and easy to make.
3. **P3 Structure – transit + TOD.** DUS is unique in that Union Station Neighborhood Company (USNC) was selected as Master Developer for private land and vertical developer of DUS sites and to participate in management of transit and public infrastructure project. The team was led by real estate developers East West Partners and Continuum as equal partners and included SOM, AECOM, and Kiewit.



Source: SOM



Marine Gateway. Images left to right. Left: View of guideway, towers and station from outside the bus loop exit on Cambrie street. Top: High Street from above looking toward Marine Drive; High Street as you turn onto it from transit; Across Cambrie street looking at station and towers. Below: High Street from Marine Drive end; and, Train entering station looking from Marine Drive toward Cambrie Street.

Marine Gateway

Marine Gateway is Vancouver, BC's first example of seamlessly wrapping a mixed-use TOD around an existing station outside of the downtown core. The integration between Skytrain, the bus loop and the TOD works very well and adds to the quality of the transit user experience. The bus loop is at the ground level of the site and connects by a grand stairway to the retail "high street" at level 2. More than 500 buses a day come in, and 500 go out from the South Vancouver bus loop. From the high street level stairs and escalators connect to the Skytrain station at level three. Riders can also take elevators at the level of the bus loop, but most use the escalators / stairs. The developers paid a \$3 million (CND) connection fee and made \$1.5 million (CND) in capital improvements to TransLink and nearly \$18 million (CND) to the City of Vancouver for Community Benefits. The design of the TOD and the station happened at the same time.

Marine Gateway seamlessly integrates a Skytrain station and major bus loop with a high-density TOD – the transit P3 frustrated even better transit / TOD integration.

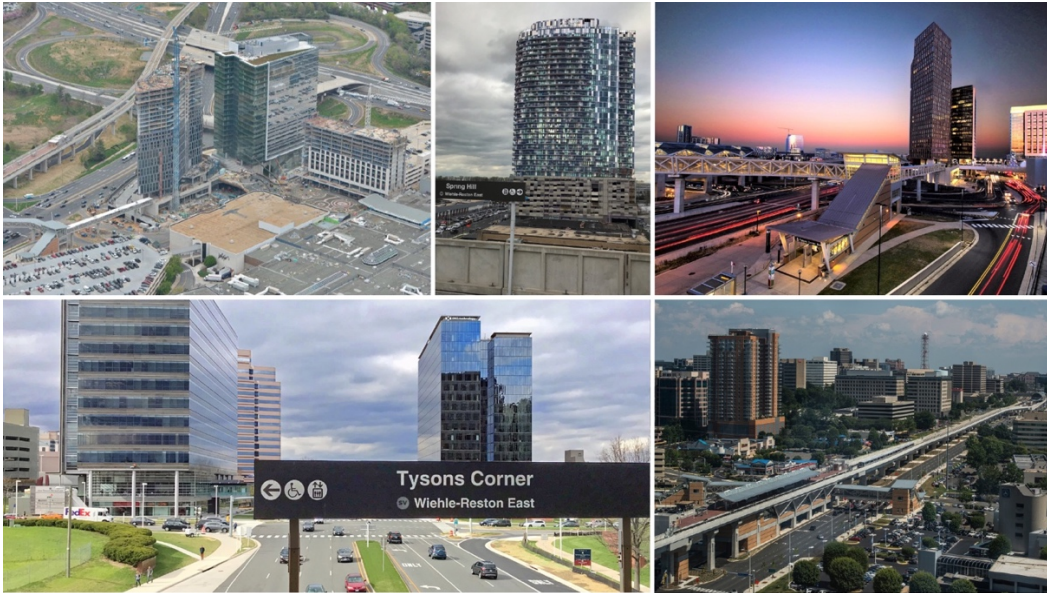
Integration Challenges

While the integration is seamless, even better integration between the neighborhood, the TOD and transit was frustrated by the following:

1. **Location of the station.** The aerial guideway and station push up against Cambie street creating a visual wall between the station and the community across the street.
2. **Busy Streets.** The station is separated from the surrounding community by high speed, high volume, higher speed auto-oriented streets. While there have been some street design modifications, access to the station remains problematic.
3. **P3 Deliver & Station Design.** Typical of Canadian P3's, the Canada Line was delivered as part of a P3 which did not include TOD. The timing of the TOD and the design and delivery of the station could have resulted in a more elegant solution. The P3 delivery and station design frustrated the ultimate TOD integration scheme advocated early-on by the developer.



Access to the station is from one end of the high street. The development team desired a connection to the station from the middle of the High Street in order to draw transit patrons past the retail shops and closer to the towers. TransLink only allows direct access to the middle of stations where a concourse is part of the station in order to allow access to either platform and avoid crowding. The Marine Gateway station was planned without a concourse and the P3 contractor had no incentive to consider a change to the station design, even with a financial contribution from the developer.



Tysons. Images left to right. Top: Tysons Corner Station elevated connection to three new towers and Tysons Center Mall; One of the towers from the station; View of pedestrian bridge across Route 123 and entrance to station. Below: View the other way from the station; Spring Hill Station in the middle of Leesburg Road.

Tysons

Four new Metrorail stations opened within the 1,700-acre Tysons Corner (rebranded as Tysons) Virginia in 2014. The stations and the more than 5.4 million SF of development built or is under construction since 2011 illustrate the challenges of retrofitting an automobile-oriented center into a walkable transit-oriented place. An additional 42.2 million SF has been approved consistent with the TOD plan in that period¹⁰.

Alignment, placing four stations in Tysons and extensive TOD planning were intended to maximize TOD. Placement of the stations in or

Despite more than 5 million SF of new TOD Tysons remains a work in progress – ridership lags because stations are isolated, and a pedestrian network is lacking.

¹⁰ Image credits: upper left Macerich; upper right Joel Grey; lower right Washington Post

next to major streets has limited ridership. According to press reports transit ridership is much lower than was forecast because of the difficulty of accessing the stations and destination's by walking.

Integration Challenges

Integration between existing commercial development, new development and transit was frustrated by the following:

1. **A Work in Progress:** While the skyline of Tysons has fundamentally changed next to stations in a short amount of time, the stations are separated from development. The pedestrian realm remains hostile to walking and is dominated by the automobile. Without a systematic approach to retrofit the walking environment into a pedestrian friendly network transit use in Tysons can be expected to lag.
2. **P3 Procurement:** Dulles Transit Partners, the P3 joint venture who delivered the rail project had no incentive to consider design solutions to better integrate the stations once it became clear cost pressures on the project and shifting signals on funding from USDOT would force an elevated alignment over a tunnel. Station designs did not respond to public or private TOD plans.
3. **Resistant State DOT:** The Virginia DOT was unwilling to consider any design changes to reduce speeds, lane widths or traffic calming to the highway sections where the Metrorail stations were located.

BART Phase II - TOD Transit Oriented Development
by GB Placemaking

TOD Case Studies and Lessons Learned



BART Phase II

TOD CASE STUDIES

Lessons Learned

Six Case Studies Sliced Two Ways

- Wilshire/Vermont
- Fruitvale
- Marine Gateway
- Denver Union Station
- Pearl District
- Rosslyn Ballston
- Tysons

- Two Reports
 1. TOD & Public Policy
 2. Stations & City Shaping
- Two big questions:
 1. What was the public sector role in the planning, financing and leadership of TOD?
 2. What was the impact of transit delivery methods & station design on good TOD outcomes?



VTA's BART Phase II TOD Study
Transit Oriented Development
TOD Planning / Public Policy
Case Studies

DRAFT :: January 10, 2019



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Three Common Threads

1. TOD is a long-term undertaking - typically spanning decades
2. Leadership, institutional capacity and support was essential for success
3. Governments employed robust TOD toolboxes with regulatory and financial incentives



Rosslyn Ballston



Wilshire/Vermont

Leadership Essential

- Half the case studies involved a redevelopment agency marshalling government actions across silos
- Each had a key leadership entity - government, private or non-profit
- With or without redevelopment that leadership role is essential for Phase II TOD



Pearl District



Fruitvale

Robust TOD Toolbox

- Specialized TOD zoning was adopted for *every* case study to allow greater density, a mix of uses, enhance walkability and require less parking
- Capital investments made for walkability & open space
- Financial & regulatory incentives for affordable housing



Marine Gateway



Denver Union Station

TOD Toolbox Snapshot

	Affordable Housing Incentives	TOD Zoning Adopted	Redevelop Agency	Station + TOD Activation
Fruitvale	Yes	Yes	Yes	Plaza + active ground floor
Rosslyn Ballston	Yes	Yes		High amenity pedestrian realm
Wilshire Vermont	Yes	Yes	Yes	Plaza + active ground floor
Pearl District	Yes	Yes	Yes	Parks + active ground floors + street calming
Denver Union Station	Yes	Yes	Yes	Plazas + active ground floors
Marine Gateway	Yes	Yes		Ped high street w/ station
Tysons	Yes	Yes		Remains auto-oriented



BART Phase II TOD

Transit Oriented Development

Transit Delivery / City Shaping

Case Studies

DRAFT :: January 2, 2019

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DENVER: TRANSIT ONLY & TRANSIT + TOD P3 ...	15



Transit projects braking
the design mold
stood out for TOD
& ridership

Value capture
critical in transit
capital funding
5 of 7 cases

Transit design
& TOD
typically on
different time
cycles

Delivery
methods not a
predictor for
good TOD
outcomes

P3's need TOD mechanism
without major cost penalties

TOD has more
riders than
Park-n-Ride
at 60 units
an acre

Value Capture

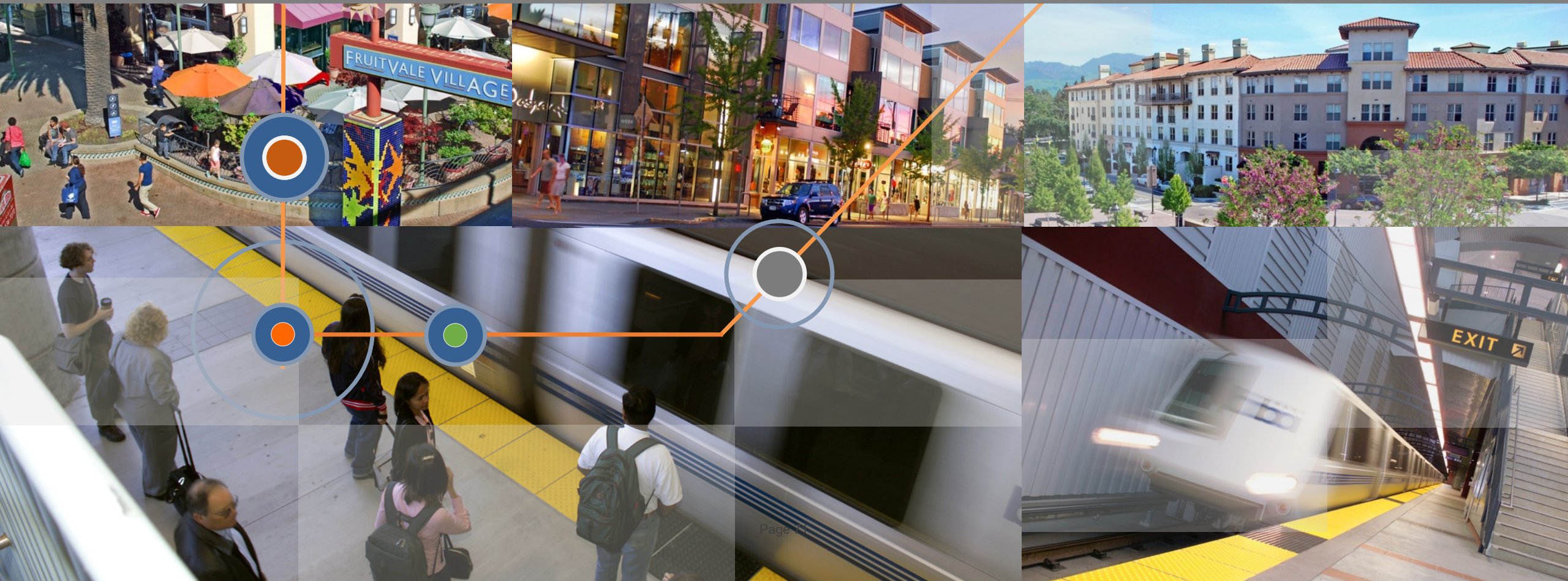
		TOD	Transit Capital
Fruitvale	TIF for TOD and \$12 million transit parking structure	Yes	Yes
Rosslyn Ballston	\$100m for TOD alignment, tight station spacing. Developer contributions for TOD area improvements	Yes	Yes
Wilshire Vermont	Assessment for subway line, TIF for TOD and station upgrade. Assessment 9% of transit capital cost	Yes	Yes
Pearl District	TIF and LID for streets, parks, streetcar 40% of transit capital cost	Yes	Yes
Denver Union Station	TIF & Metro District (property taxes) for transit and TOD infrastructure	Yes	Yes
Marine Gateway	TOD paid \$17.8m in community benefits fees and development levies to City; \$4m transit connection fee, \$1.5 for capital CND	No	Yes
Tysons	\$650m from 2 assessments, one for transit (\$400m) and roads (\$250m). 14% of transit capital cost	Yes	Yes

Transit Design & Timing for TOD

Did Transit Design Enable TOD?

Fruitvale	TOD not considered	No – TOD & station don't interact
Rosslyn Ballston	Transit designed for TOD	Yes – Both highly integrated
Wilshire Vermont	TOD not considered	Yes – TOD enhanced transit
Pearl District	Transit designed for TOD	Yes – Both highly integrated
Denver Union Station	Transit designed for TOD	Yes – Seamless integration
Marine Gateway	Both designed in parallel	Yes – Both well integrated
Tysons	Alignment for TOD	No – Station locations limit TOD

Implications for Phase II BART



Phase II can Build On

- Good TOD was the result of employing a comprehensive approach over a period of decades
- TOD became a priority as a means to the end of achieving multiple objectives
- New TOD tools employed along implementation continuum to achieve desired results
- Solve for a TOD district



Capital One HQ, Tysons



Wilshire/Vermont

Case Studies Point A Way Forward

- Critical next steps to be taken
 - Leadership from Cities essential:
 - make BART TOD a priority
 - establish implementation entities
 - Commitment to TOD zoning: denser / allowable use / less parking / walkable
 - Move to align capital improvements & planning in station areas



Denver Union Station



Pearl District

VTA BART Phase II Extension - by HR&A

Case Studies



VTA BART PHASE II EXTENSION

CASE STUDIES



Expo/Crenshaw

A prioritization of affordable housing and community benefits has led to diminished transit agency revenues.

**LA Metro/
LA County**
Agency

2019
Scheduled Station
Opening

3.4 acres
2 parcels
Site Area

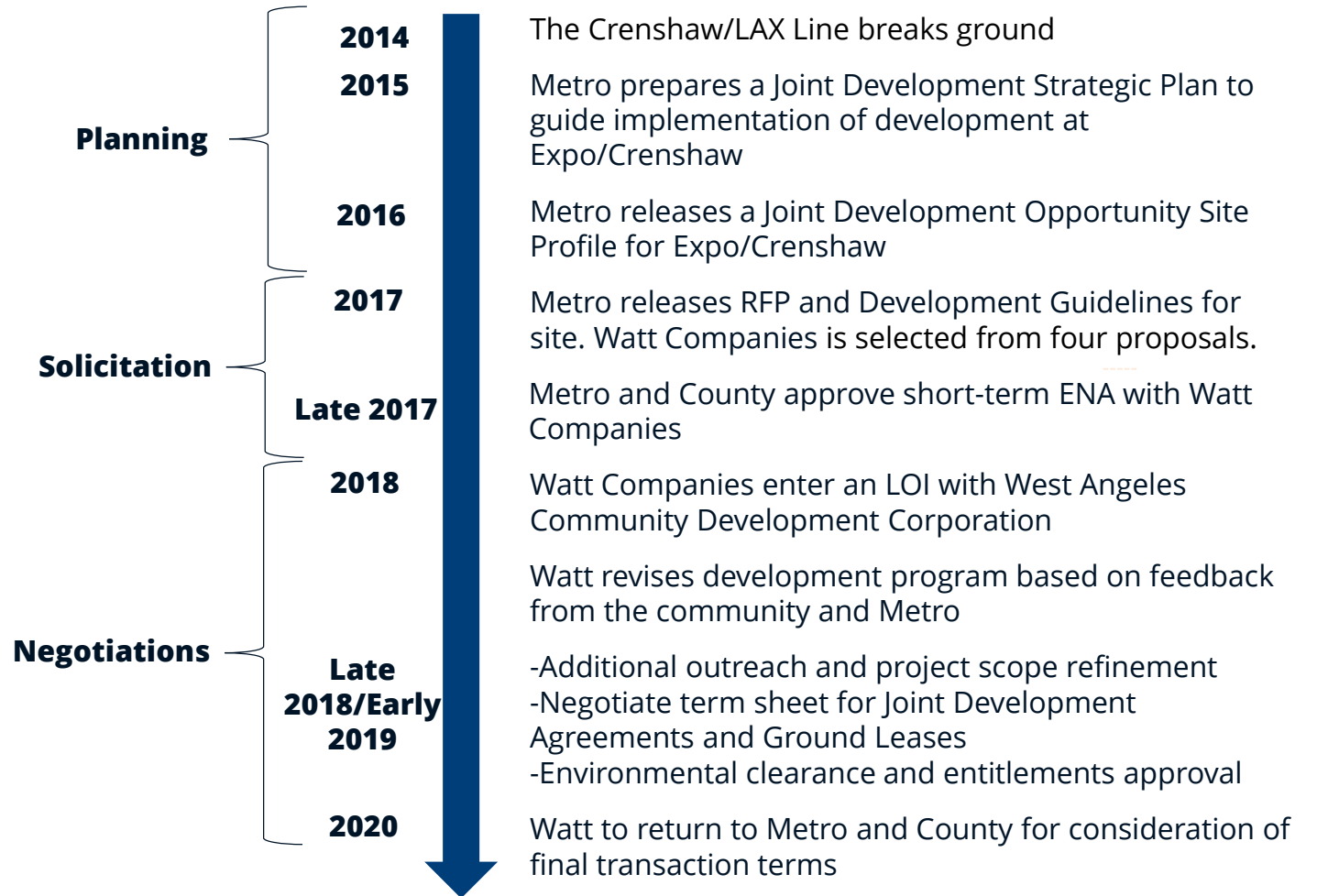
Light Integration
JD Model



Expo/Crenshaw: Process | LA Metro and LA County released a joint development RFP for their sites well after commencement of transit lite extension.



Source: LA Metro



Expo/Crenshaw: Development Guidelines | Pre-solicitation development guidelines gauged market potential and development guidelines, facilitating developer responses.

Development Guidelines: Metro's comprehensive Development Guidelines for the station included an overview of the opportunity and the market area, general station area policies, stakeholder vision for the development program, the sites' regulatory and policy framework, design considerations and guidelines, and a summary of Metro's comprehensive community outreach process.

- **Facilitative Features:** A representative from Watt Companies noted that the clear definition of the opportunity through market analysis, regulatory information, and site opportunity overview in the Development Guidelines made the project more attractive by streamlining their due diligence process and providing a jumpstart on community outreach.
- **Missing Guidelines:** Watt's initial program proposal and financial terms have since been going through revisions upon learning about requirements that were not outlined in the Development Guidelines. These included having a required nonprofit local equity partner and using prevailing wage for construction.

Los Angeles County
Metropolitan Transportation Authority

Development Guidelines for
Expo/Crenshaw Station Joint Development Opportunity

JUNE 2016

EXPO/CRENSHAW STATION - DEVELOPMENT GUIDELINES

escalators, and elevators), and was initially planned to include a 110-space surface parking lot serving Metro commuters and patrons (see Figure 9). Metro has received approval from the Federal Transit Administration (FTA) to relocate this parking off-site to facilitate the highest-quality development project on this site. Upon completion of Metro construction, Bronson Avenue will dead-end at a cul-de-sac approximately 150 feet north of Rodeo Road. Just to the north of the cul-de-sac, the Los Angeles Department of Water and Power will be providing an at-grade facility that serves Metro's utility needs (see additional details in Section V).

Figure 9
Joint Development Opportunity Site B

3. THE MARKET OPPORTUNITY

Located at the intersection of two light rail lines, the Opportunity Sites are directly linked to three of the Los Angeles basin's major job centers: Downtown Los Angeles (297,000 jobs), Santa Monica (83,000 jobs) and the LAX area (100,000 jobs). These connections and the Opportunity Sites' visibility on a major arterial suggest strong opportunities for both residential and commercial uses.

There are approximately 7,100 people currently living in 2,700 households located within a half-mile of the station area. These households reside in a mix of owner-occupied homes (47% of total households) and rentals (53% of households). The rate of owner-occupied homes is substantially higher in the station area than the percentage in the City of Los Angeles as a whole (38% of owner-occupied units), pointing to the stability of the immediate surrounding area.

The primary market area (shown in Figure 10) has largely recovered from the 2008 – 2011 recession. Recent single-family home prices within the primary market area are close to 2007 levels and apartments in more recently constructed buildings yield higher than average area rents. Recently, the community has seen major investment in new retail uses, including Capri Development's announcement to renovate and expand the mix of uses at the Baldwin Hills Crenshaw Plaza one mile to the south of the Expo/Crenshaw Station (see Figure 11).

A market demand study completed in advance of the writing of these guidelines indicates that there is strong demand for a number of retail uses in the station area. The demand study also indicates strong support for new market rate residential uses.

While no new office buildings have been built within the station area in over 10 years, to the west of the station area, adjacent to the Expo Line La Cienega/Jefferson and Culver City Stations, architecturally innovative campus-style office buildings with large, flexible floorplans

Figure 10
Expo/Crenshaw Station area development will draw from a larger primary market area shown above.

Figure 11
Baldwin Hills Crenshaw Plaza
Photo by Primetor

M Metro

Snapshot of LA Metro's Development Guidelines for Expo/Crenshaw

Source: LA Metro

Expo/Crenshaw: Developer Interest & Selection | Metro selected Watt Companies' proposal based on its alignment with the development vision and strong financial terms.

Developer Interest: Metro received four proposals. Watt, the winning bidder, noted that its interest in the project was related to:

- A strong interest in pursuing development in the emerging Crenshaw submarket;
- The timing of the market cycle and transit line construction;
- The project's low perceived risk profile, given the certainty of the transit line completion and Metro and the County's interest in seeing the joint development project completed, even if it takes longer than a typical project to negotiate, entitle and construct;
- Development Guidelines that streamlined Watt's due diligence and community engagement process; and
- Land use entitlements from the City already aligned with Metro's development guidelines.

Procurement: Watt's proposal earned a winning composite score based on vision, scope, and design, development team experience and financial capacity, financials, and implementation strategy. Watt's original proposal had more than twice as much public and open space as the other three proposals, as well as the highest ground rent, but only met the minimum requirement for affordable housing.

Watt's Original and Revised Development Program

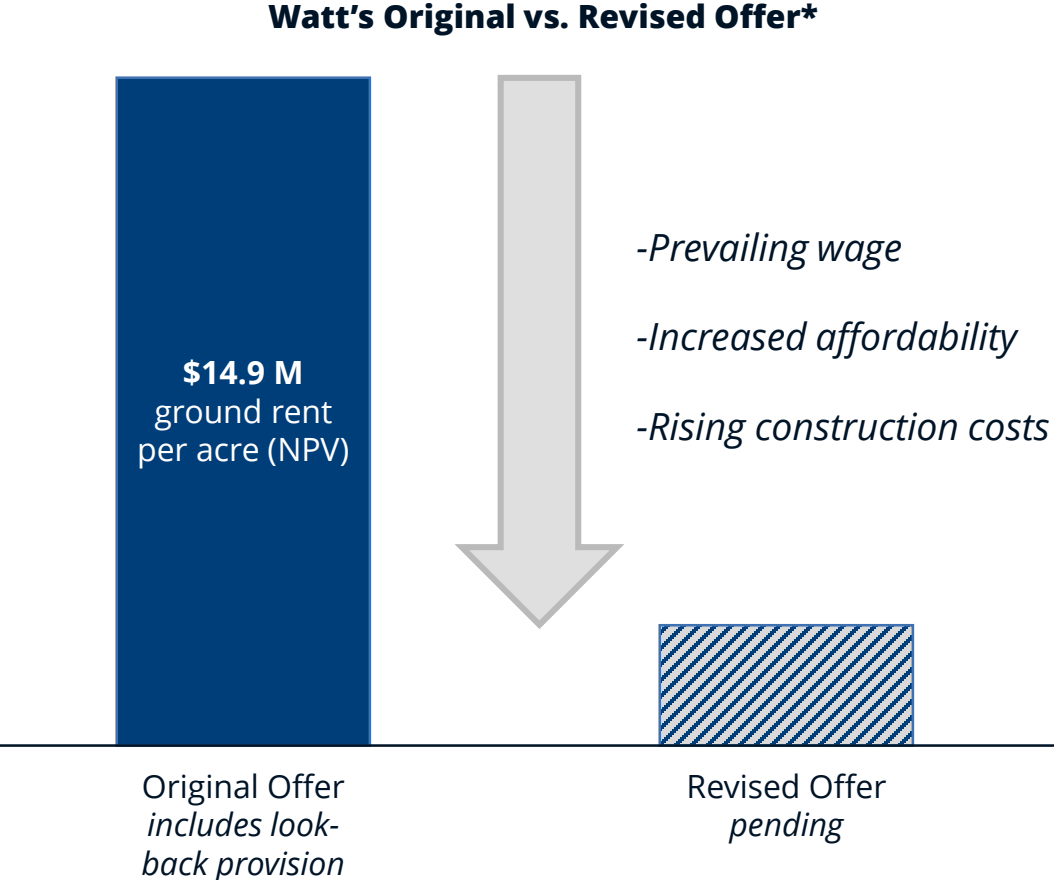
	Original Program	Revised Program
Total Residential Units	492	At least 400
<30-80% AMI	15%	5-10%
<50% AMI	0%	At least 15%
Total Affordable Units	15%	20-25%
Non-residential uses	47,500 SF	At least 40,000 SF

Source: Watt Companies

Expo/Crenshaw: Negotiations | Metro has requested Watt to increase its affordability and pay labor prevailing wages, which has significantly weakened Watt's financial offer.

Original Proposal: Watt proposed the highest ground rent to Metro and LA County at about \$50 million dollars net present value over a 66-year term, as well as a "Look-Back provision" that would provide a one-time payment in the event the project is more profitable than projected. Watt did not propose to rely on any grants or subsidies, setting it apart from the other bidders.

Revised Terms: New requirements brought forward by the community following the original proposal, including additional affordable units and deeper affordability, are likely to significantly decrease Watt's final ground rent offer to Metro.



*For illustrative purposes, not to scale. Revised offer is unknown at this time.

Expo/Crenshaw: Infrastructure Participation | Watt was resistant to develop any infrastructure because the risk was not justifiable in terms of the project value.

Station Engineering and Design: Since Watt was procured well into the construction of the Expo/Crenshaw subway station, they were not involved in the engineering or design of the station itself. The station box sits under Crenshaw Boulevard, so there was no need to build the box to support the load of a joint development. Watt has since worked with Metro to understand how the station portal will integrate with the public plaza to be developed and managed by Watt.

Infrastructure Development: Watt declined Metro's request to develop station access portals using a knock-out panel due to the liability and risk involved with developing public infrastructure. They agreed to develop a station canopy, a smaller commitment, largely because it will fall on their property and is closely related to the rest of the public realm improvements that Watt has already agreed to fund.

Infrastructure Funding: Watt would have been willing to reimburse Metro for infrastructure in lieu of providing the equal value of community benefits, but given the minimal value add to Watt's project in terms of direct station access, Watt would have viewed this type of contribution as a part of the overall benefits package.



Aerial view of construction staging at the intersection of Crenshaw and Exposition Boulevards, April 2018

Expo/Crenshaw | Key Takeaways

- The developer is generally agnostic to whether they provide community benefits or financial contributions to the transit agency, but when requested transit infrastructure does not add catalytic value to the project, cash contributions to infrastructure will come out of the land value. The project must ultimately meet the developer's required returns, resulting in a series of tradeoffs.
- The scale of the project (\$200M+), the market and transit line timing, and the role of Master Developer made Watt Companies feel the complex partnership was worth their time.
- At relatively lower value sites like Expo/Crenshaw, developers will unlikely be interested in taking on any additional risk or complexity to develop station infrastructure but may agree to develop small components.

Joint Development Partnership Model



Source: LA Metro

Capitol Hill

Sound Transit's negotiations with the City allowed the transit agency to maintain land value and ensure developer interest while providing ample community benefits.

Sound Transit
Agency

2016
Station Opening

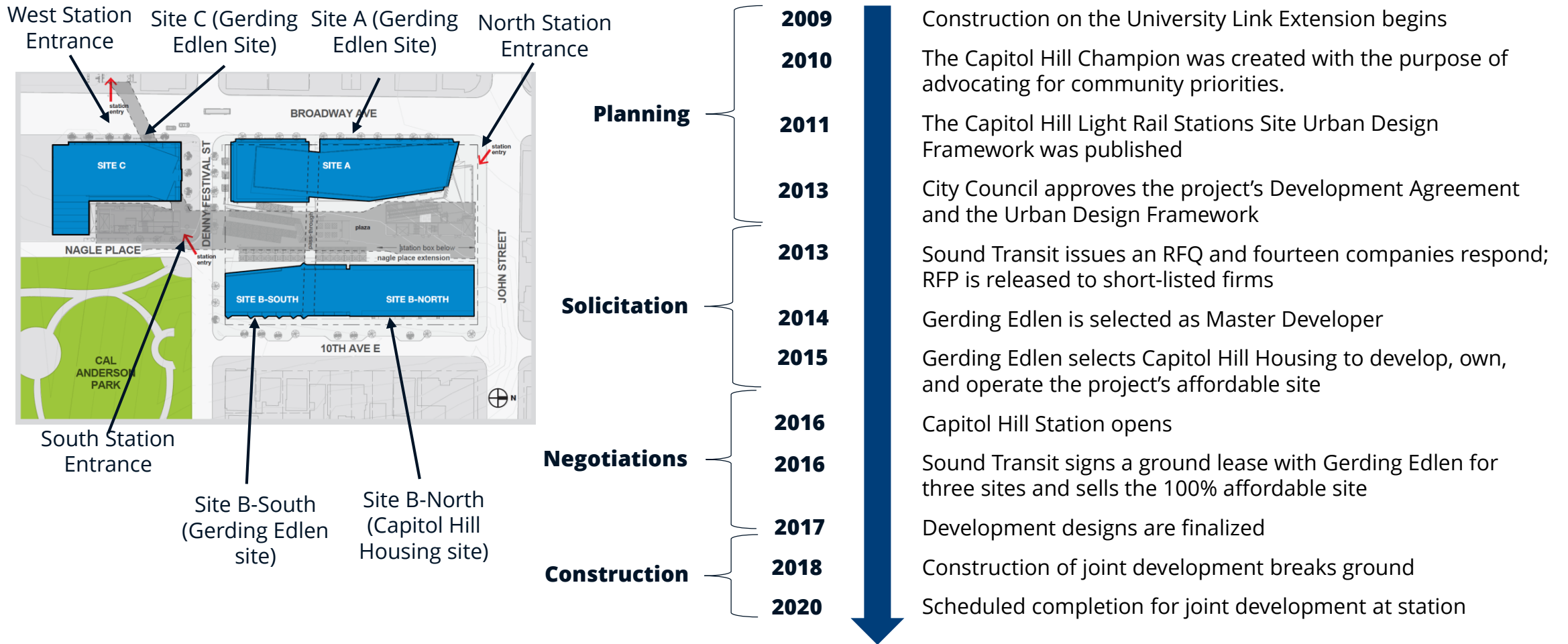
2019-2020
Scheduled JD Opening

2.3 acres
4 parcels
Site Area

Passive Partnership
JD Model



Capitol Hill: Process | Years of community engagement required Sound Transit to pursue City incentives to make an aggressive set of guidelines palatable for developers.

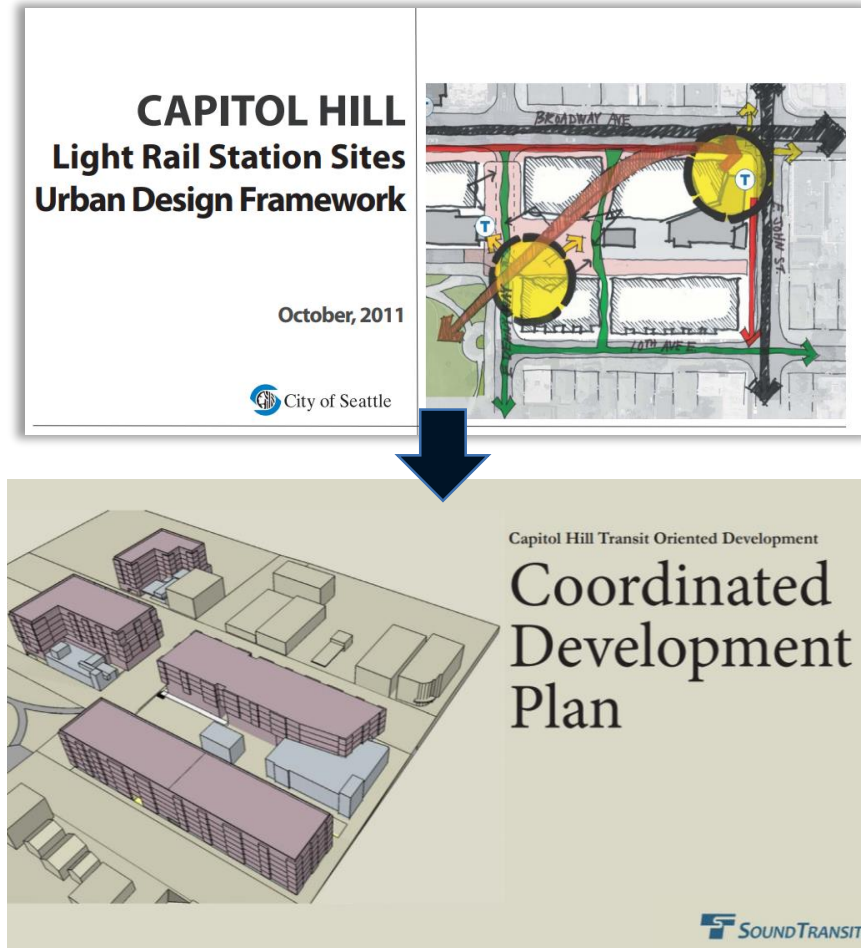


Capitol Hill: Development Guidelines | Sound Transit's detailed Coordinated Development Plan offered complete transparency but little flexibility.

Preparation:

- Community members spent years developing the **Urban Design Framework** for the Station in collaboration with community organizations, the City of Seattle, and Sound Transit.
- The City and Sound Transit entered a **Development Agreement** that ensured City cooperation through City affordable housing grants, streamlined design review, multifamily property tax breaks, and height bonus in exchange for the provision of affordable housing.
- With the City's cooperation, Sound Transit adapted the community's Urban Design Framework into a **Coordinated Development Plan**, which was intended to provide flexibility for developers to comply with the community's vision while responding to market conditions and Sound Transit's business objectives.

Developer's Perspective: Developers noted that the Coordinated Development Plan provided complete transparency but the design requirements were too rigid and specific. Because Sound Transit's sites are being developed by two developers, and there are separate architects and contractors for different sites, the developers have needed to collaborate extensively with each other, and with Sound Transit, to create a cohesive site design intended to realize the TOD vision.



Capitol Hill: Procurement & Program | Sound Transit waited until the final round of procurement to decide whether the sites would be developed together or separately.

Interest: Fourteen firms responded to Sound Transit’s RFQ, and six firms were short-listed to complete the RFP. Of the fourteen RFQ responses, six were applying only if they were to be Master Developer. Sound Transit did not decide until after receiving proposals whether the four parcels should be developed separately or together.

Gerding Edlen was selected to be Master Developer with the highest score. Scenarios for leasing and purchasing the designated affordable site, “Site B-North,” were included in Gerding’s winning proposal, as were LOIs with the farmer’s market and Bright Horizons, as was a proposal for an LGBTQ office space. Gerding was selected for its highest overall score of Development Program, Financial Capacity and Project Financials, Project Approach, and Transaction Structure.

Program: Gerding Edlen’s proposed program for the four sites included over 400 units of affordable housing, with 38 percent of the units affordable at 60% AMI or less. The program also included about 40,000 square feet of commercial and community space, and 216 parking stalls. The proposal also include a community center, daycare site, and a permanent space for a farmer’s market. After selection, Gerding brought Capitol Hill Housing on to develop, own, and operate one of the sites at the request of Sound Transit.

	Gerding Edlen	Capitol Hill Housing	Overall
Total Residential Units	318	110	428
<30% AMI	0%	50%	55
<60% AMI	21-22%	50%	122
Total Affordable Units	21-22%	100%	177
Non-residential uses	39,150 SF	0 SF	39,150 SF

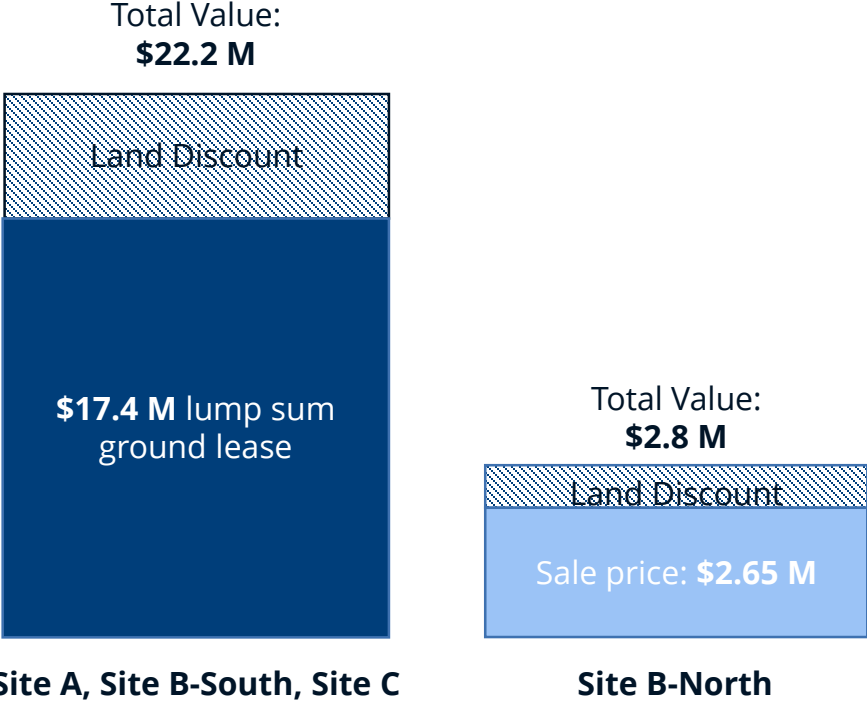
Capitol Hill: Negotiations | Between a fee-simple land sale, a 99-year ground lease, and a stake in the leased site, Sound Transit is receiving roughly the fair market value for the land.

Development Agreement with the City: Sound Transit was able to guarantee City affordable housing resources and a property tax abatement, as well as additional height and a streamlined design review process. These arrangements positioned Sound Transit to maximize potential revenues given the community benefits in the development program.

Land Valuation: In total, the developable land of the four TOD properties, with consideration of the development agreement, was valued at \$25 million. By including the land appraisal in the RFP, \$22.2 million for Site A, B-South, and C, and \$2.8 million for Site B-North, Sound Transit essentially put a price tag on the project. Without the provisions of the developer agreement, the land would have significantly less value due to the required level of community benefits.

Final Offer: Gerding signed a 99-year, \$17 million ground lease for three of the four parcels. Gerding pays an annual rent of \$222,000 and owes Sound Transit a lump sum of \$17.43 million by 2033. Capitol Hill Housing purchased Site B-North for \$2.65 million fee simple. Sound Transit maintained a \$4.8 million stake in Gerding’s three sites. Sound Transit will use 42 percent of the fee simple land sale to pay back FTA grants. The developer will not make any infrastructure contributions to Sound Transit.

Final Offers as a Share of Sound Transit’s Land Appraisal



Capitol Hill: Infrastructure Participation | Developers did not have an interest in developing or funding direct station access.

Station Box Engineering/Design: Sound Transit made an early decision to situate the joint development around the station box, with a public plaza at Site A, one of Gerding's sites, sitting on top of the station box.

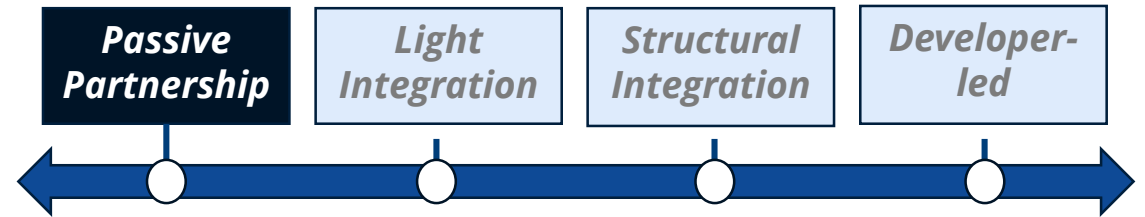
Infrastructure Development and Funding: Gerding and Capitol Hill Housing both decided not participate in the funding or development of direct station access. A representative from Capitol Hill Housing noted that with three existing station entrances just a few steps away from any of the buildings, they did not feel it added value to their projects.



Capitol Hill | Key Takeaways

- Coordination with the local jurisdiction on incentives and community benefit requirements can allow a transit agency to restore land value to the developer, and in turn to the transit agency, that would otherwise be lost to community benefits through various City incentives.
- Isolating an affordable housing site within the joint development area can allow affordable housing developers to maximize financing sources, thereby leaving more land value for the transit agency from market rate and commercial projects.
- Some amount of early design and community engagement helps set expectations, but with multiple sets of developers, architects, and contractors, the intensity of design guidelines can be prohibitive and costly to prospective developers.
- Transit agencies faced with community benefit requests can think creatively about incorporating community-serving uses and programming on top of station boxes that do not require the station box to support additional vertical development. The plaza on top of the Capitol Hill Station box will be subleased to the Broadway Farmer's Market as their permanent home and will serve as a community event space.

Joint Development Partnership Model



Bethesda Red Line

Both the long-completed development atop the Bethesda Metrorail station offers insights on the implications of physical integration.

1983

Station Opening

2022

South Entrance
Opening

3.5 acres

Site Area

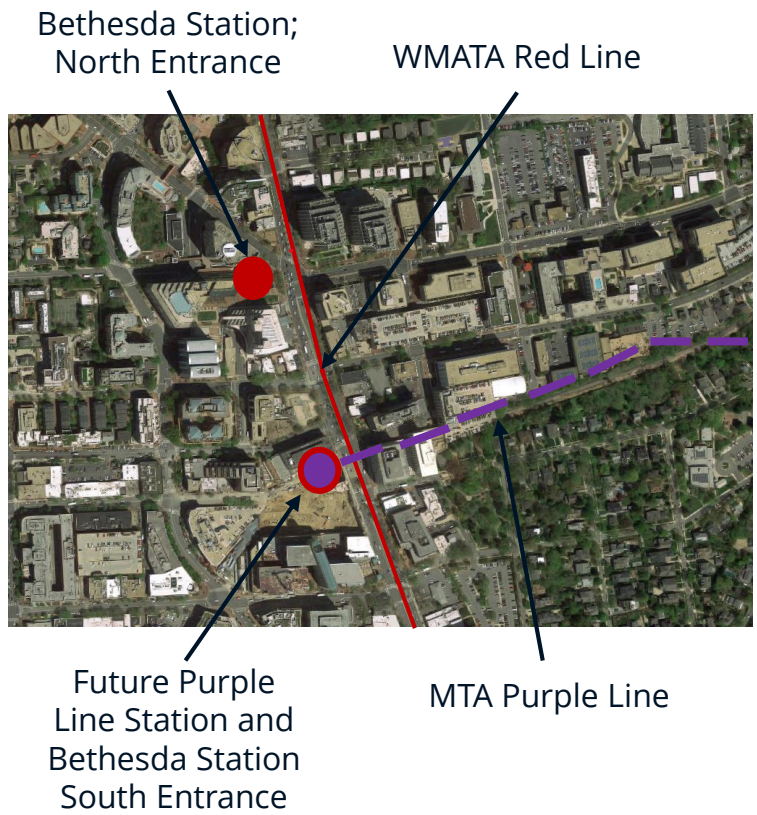
Structural Integration

JD Model

WMATA

Agency

Bethesda Red Line: Process | Now more than thirty years old, Bethesda Station is under construction again as a new entrance is being built for the intersecting Purple Line.



Station & JD Opening					1976 Montgomery County releases the Bethesda Sector Plan, specifying guidelines for the Bethesda Central Business District
					1977 WMATA and the County reach an agreement to combine properties to form a developable parcel at Bethesda station.
					1980 The Bethesda Metro Center Limited Partnership entered into a 50-year air rights lease with WMATA for development above Bethesda Station
Changing Ownership					1981 Bethesda Metrorail station opens
					1984 Bethesda Metro Center opens, a 17-story office building, 12-story hotel, and 3-story retail arcade
					1999 Meridian Group purchases part of the complex
					2008 Montgomery County Council votes to fund construction of a new south entrance to the Bethesda Metro serve as the connection between the Red Line and the future Purple Line
South Entrance					2011 Brookfield Properties buys 3 Bethesda Metro Center office building from Meridian Group
					2022 Scheduled South Entrance opening

Bethesda Red Line: Procurement & Program | With a Red Line connection to D.C., Downtown Bethesda offered a unique and attractive opportunity to developers in the early 1980s.

Market Context and Developer Interest: When Metrorail arrived in Downtown Bethesda in the early 1980s, a 1976 Sector Plan by Montgomery County had paved the way for relatively tall and high-density development in the immediate station area, aiming to promote a commercial district around the station. With the new station's proximity to one of the highest-income residential areas in the region, and the National Institutes of Health and Bethesda Naval Hospital less than one mile north, Downtown Bethesda presented unparalleled opportunity for developers. R&K, the developer ultimately selected by WMATA noted that the station site was the most desirable development location in the County.

WMATA's developer selection was focused primarily on the amount of revenue generated for WMATA and the effects of the proposed program on ridership. WMATA benefited from enormous developer interest in the site, choosing from among eight proposals.

The developer, R&K, spent 2.5 years and \$5 million before breaking ground. This upfront investment of time and money was unprecedented for private developers in this market at that time, but R&K felt the unique opportunity was worth the investment.

Program: The developer's \$135 million three-building development above the station included three structures. The program included one 17-story office tower with 368,000 square feet of office space, 41,600 square feet of retail space, a 390-room hotel, and a five-story garage.

R&K Bethesda Center Program	
Office	368,000 SF
Retail	41,600 SF
Hotel	390 rooms



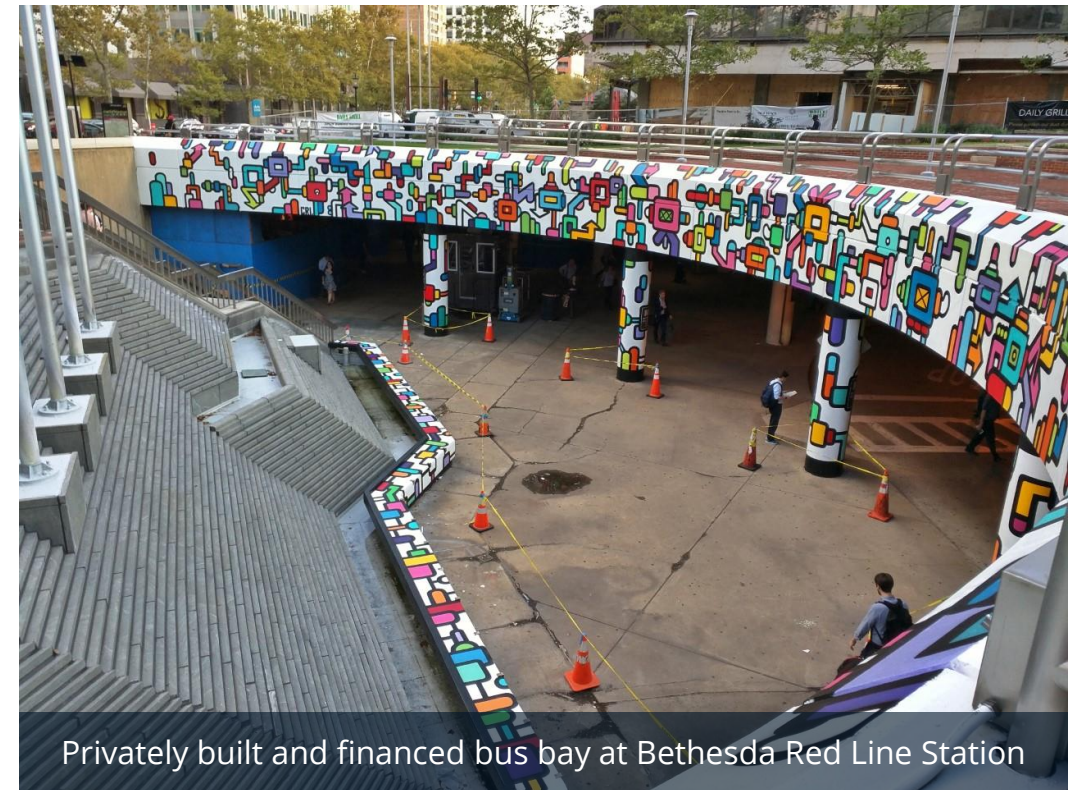
Bethesda Red Line: Deal Terms | WMATA's lucrative deal with BMCLP included the leasing of air rights and developer financing of a below-grade bus facility.

Deal Terms: Bethesda Metro Center Limited Partnership (BMCLP), formed by the developers R&K Associates, and WMATA entered into a 50-year air and ground rights lease that can be renewed at the BMCLP's option for an additional 49 years. This is thought to be one of the most lucrative joint development deals across any United States transit agency.

- **Base Rent:** WMATA receives \$1.6 million annually in rent from the air rights and ground leasing.
- **Additional Rent:** Since 1986, the owner of BMCLP has been obligated to pay WMATA additional rent equal to 7.5 percent of annual gross revenue in excess of \$31 million.

Cost-sharing: In addition to paying rent annually, the developer entered a capital-cost sharing agreement with WMATA for the below-grade bus bay, which is integrated with the Red Line station.

- **Capital Cost-sharing:** The developer built and financed bus bay saved WMATA an estimated \$1 million (1982 dollars) in construction costs



Privately built and financed bus bay at Bethesda Red Line Station

Bethesda Red Line: Physical Integration | BMCLP has changed hands since the 1980s, resulting in unexpected challenges related to the physical integration of the private development.

Changing Ownership: The lease agreement was originally for a single owner, but since the buildings have changed ownership in 1999 and 2011, they are now owned by two separate entities, Meridian and Brookfield. WMATA was required to “split” the lease into two separate air rights leases. A representative from WMATA suggested that transit agencies anticipate this possibility in advance for any joint development project that includes multiple asset classes or buildings, noting that WMATA has suffered from a lack of pre-designated responsibilities and guaranteed access.



Bethesda Station escalators were replaced in 2015, a 2.5 year project

Physical Integration Challenges: Bethesda Station is fully integrated with the private development, situated between a private parking garage directly below the station and the hotel and office structures, which are located on the platform above the station. According to a representative from WMATA, over the years, the station being “sandwiched” between several private properties, which are now under different ownership, has led to disagreements around responsibility for maintenance and capital improvements. Another problem relates to how the transit agency can access or impact the directly surrounding uses if an issue arises with the station box, and vice versa. When the private garage began to structurally crumble, the private owner was required to rebuild the garage from the inside without it disrupting WMATA service. In reflecting on these challenges, WMATA noted that a transit agency seeking physical integration with private development should be excruciatingly clear about maintenance obligations and access points. Otherwise, the costs and negative impacts of aging infrastructure will always fall on the transit agency.

Bethesda Red Line: South Entrance | The decision to include a southern knockout panel will soon pay off, as Bethesda Station will be connected to the future Bethesda Purple Line station.

Bethesda Station South Entrance: Since its opening in 1981, Bethesda Station has only had one entrance, the Northern entrance. However, when designing the station, WMATA included a **knockout panel** for a potential future Southern entrance. Because of the new Purple Line station's location to the south of Bethesda Station, Montgomery County is paying to connect the Purple Line Station to Bethesda Station using the knockout panel to build a southern mezzanine with a connection to the Purple Line Station below the surface. WMATA now stands to benefit enormously from a direct connection to the Purple Line because their decision to add a Southern knockout panel when designing the station.

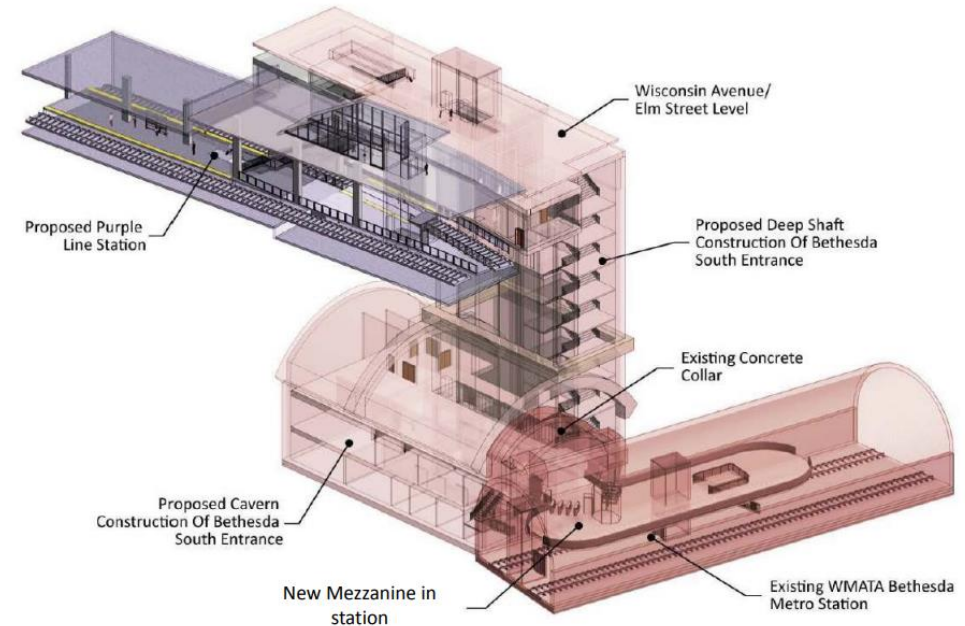


Diagram of the connection and mezzanine between future Purple Line Station and existing WMATA Bethesda Red Line Station

Source: Bethesda Magazine

Bethesda: Red Line | Key Takeaways

- A highly lucrative joint development deal was feasible in Downtown Bethesda due to the potentially high incremental values attributable to transit and WMATA and Montgomery County's priorities. Both the transit agency and the County were interested in maximizing revenues on the site, through leasing and taxes, respectively.
- WMATA's decision to include a knockout panel in the original station design is going to pay off nearly 40 years later, as Montgomery County pays to build the panel as a South Entrance to the station with access to the future Purple Line Station.
- Although the Bethesda Metro Center is hailed as a fully integrated joint development, there have been ongoing challenges due to WMATA's failure to anticipate issues related to "living with each other," particularly in dealing with aging facilities. WMATA conveyed that at integrated sites, the private sector is not likely to care about maintaining their facility in a way that preserves the transit facility. Thus, the transit agency should seek to contractually protect themselves with detailed provisions on operating and maintenance responsibilities.

Joint Development Partnership Model



Bethesda Purple Line

Developer participation in the delivery of station infrastructure below their future development demonstrates partnership potential at high value opportunity sites when a transit agency and municipality are aligned.

2022

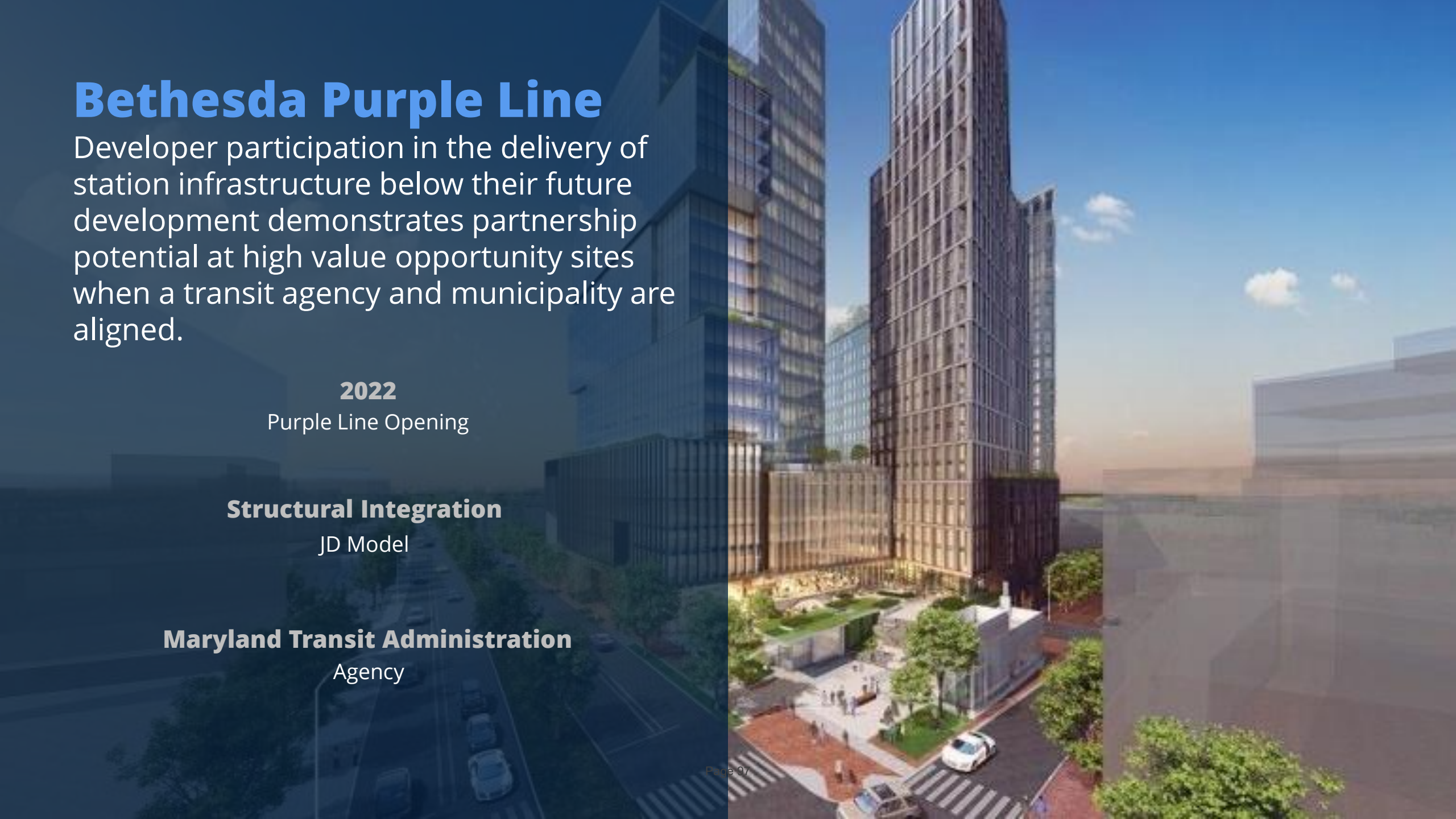
Purple Line Opening

Structural Integration

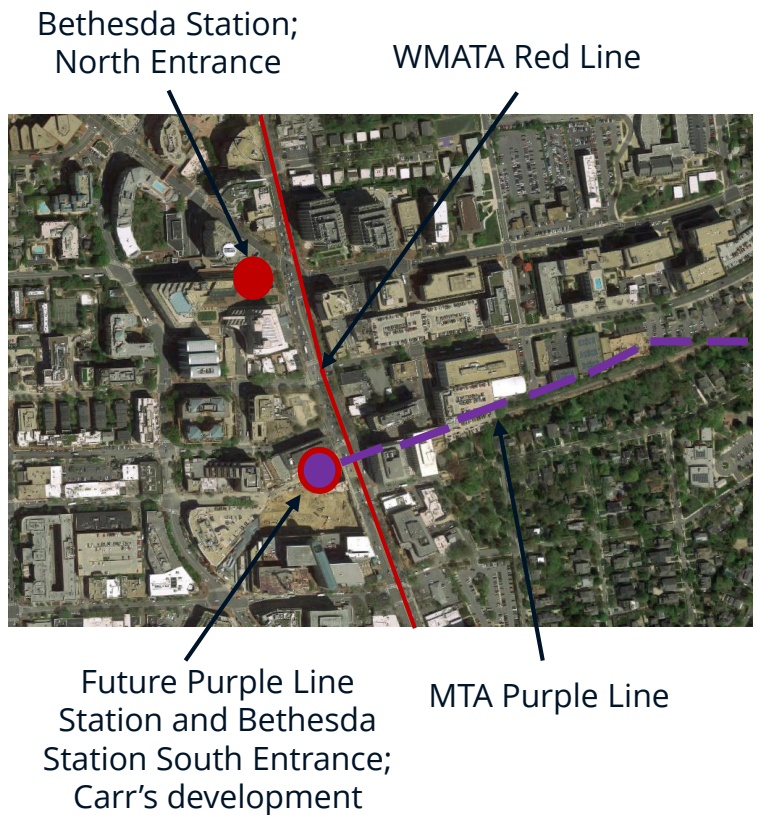
JD Model

Maryland Transit Administration

Agency



Bethesda Purple Line: Process | The future Purple Line has heightened developer interest in downtown Bethesda.



Purple Line Planning

Strategic Incentives & Negotiations

Station and real estate construction

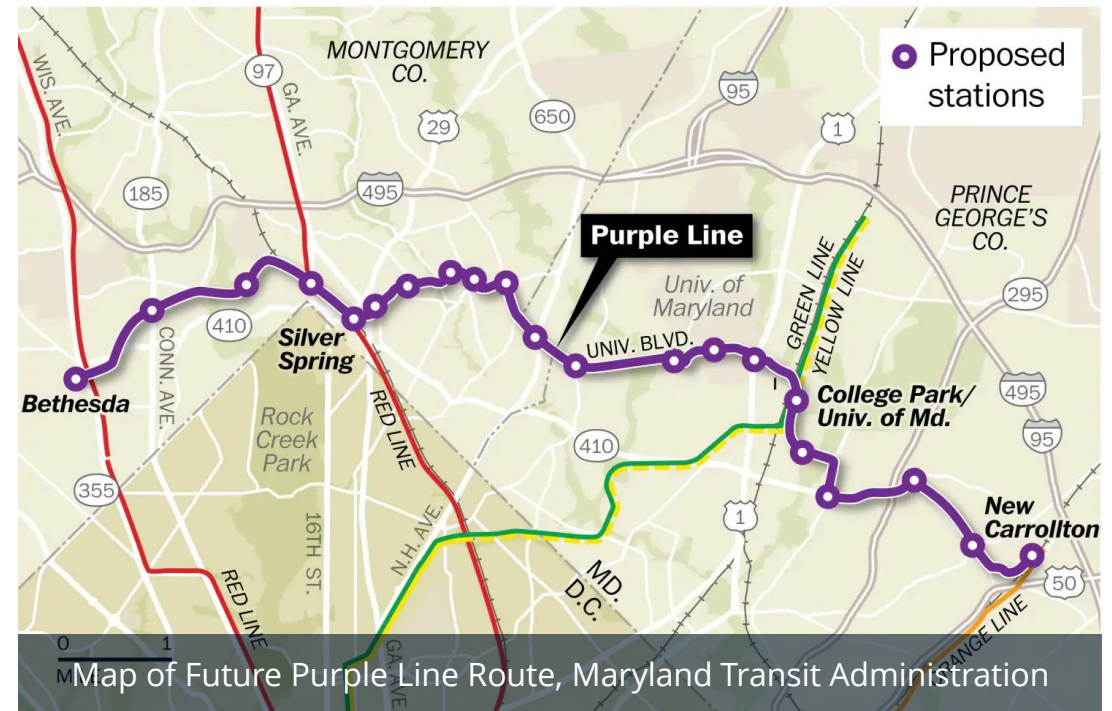
- 1994** The Purple Line is first proposed as a “ring” line connecting Maryland suburbs of Washington, D.C.
- 2008** Montgomery County Council votes to fund construction of a new south entrance to the Bethesda Metro serve as the connection between the Red Line and the future Purple Line
- 2015** The Purple Line is officially approved by Governor Larry Hogan
- 2015** Montgomery Co. changes the zoning of the property above the planned Bethesda Purple Line Station to incentivize redevelopment that would make room for the station
- 2016** Carr Properties purchases Bethesda’s four story Apex Building with plans to demolish the building, allowing for construction of the station below
- 2017** Construction begins on the Purple Line
- 2016** Carr properties receives first-stage entitlement approvals on a 23-story tower, agreeing to construct a shell for the station
- 2017** Carr properties breaks ground at the future site of the Purple Line Station
- 2022** Scheduled Purple Line and South Entrance opening

Bethesda: Purple Line | The introduction of the Purple Line offers new opportunities for capturing value and engaging private partners, and new obstacles to physical integration..

Purple Line: The Maryland Transit Authority's Purple Line is currently under construction, a 16-mile light rail line that will connect several Maryland suburbs. Bethesda will be the western terminus of the Purple Line, and the Purple Line Station will intersect with the Red Line at the Southern end of the existing Bethesda Station.



The under-construction shaft where the Purple Line will meet the Red Line in Bethesda



Bethesda: Purple Line | Montgomery County negotiated exactions from Carr Properties in exchange for development approval above the new Bethesda Purple Line Station.

Physical Integration of the Purple Line Station, Bethesda Station South Entrance, and Carr's private development: In order to create more space for the future Purple Line Station, Montgomery County up-zoned the privately-owned site above the future station to incentivize redevelopment. Carr Properties then purchased the site from Apex, and as part of the entitlement for its proposed 23-story tower, Carr is required to construct the shell for the Purple Line Station and the access to the Red Line under its project, as well as construct new access to the future Purple Line Station.

Timing: A representative from the development team who has been involved in the arrangements between Carr Properties and the Purple Line, noted the difficulties in simultaneously delivering co-located station infrastructure and real estate. For Carr Properties, there have been two significant obstacles to fulfilling their commitment to deliver a station shell with their development: 1) the ability to secure financing (and line up tenants) far enough in advance of delivering the project to guarantee participation in the infrastructure development; 2) and the uncertainty of where in the market cycle they would be when the station box needs to be delivered. This person noted that any developer is going to want or require contingency to when they need to deliver a piece of infrastructure.



A rendering of the plaza at the corner of Carr's under-construction properties.
Source: Carr

Bethesda: Purple Line | Key Takeaways

- At catalytic value opportunity sites, transit agencies can work with municipalities to create leverage that compels developers to engage in infrastructure delivery through regulatory framework.
- When a transit agency seeks to engage a private developer in some part of the infrastructure delivery, there must be an extremely careful alignment of station and development delivery timing, or enough contingency to mitigate the risk associated with unknown market conditions at the time of station completion.
- The reward in this case, entitlements to construct among the tallest developments in the County, with direct access to both the Red and Purple lines, compelled Carr to take on the risk of infrastructure delivery.

Joint Development Partnership Model



Canary Wharf

Canary Wharf Station was designed and built by a private entity contracted to Transport for London, and received £150 million towards construction.

2015/2019

Scheduled Retail/
Station Opening

Isle of Dogs, London

Location

115,000 SF

Commercial Development

Transport for London*

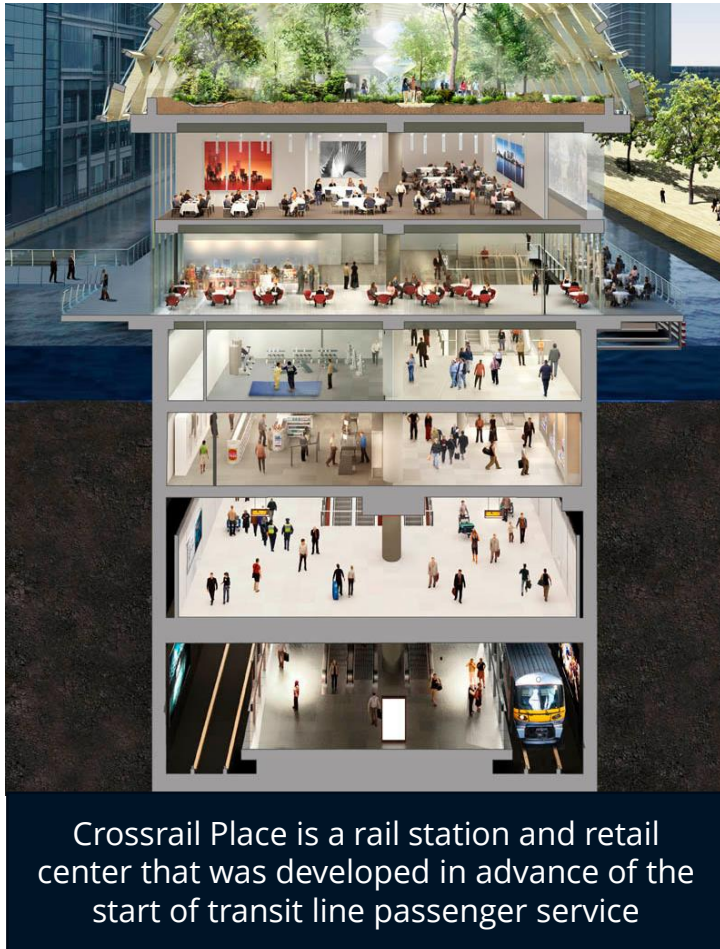
Agency

Developer-Led

JD Model

**To be operated by Hong Kong's MTR Corporation and function as part of the United Kingdom's National Rail*

Canary Wharf: Process | A robust and collaborative process successfully demonstrated the potential benefits of the Crossrail project to business interests.



HR&A Advisors, Inc.

Planning & Advocacy

Procurement

Construction & Continued Pursuit of Funding

2001

2004

2006

2008

2008

2009

2010

2015

2019

Cross London Rail Links Ltd (“CLRL”) formed by TfL and the U.K. Department for Transportation (“DfT”) to develop proposals for what would become Crossrail

Appointed review team determines that London “business interests” would be willing to contribute up to £3 billion in NPV through “alternative funding mechanisms,” but that project too massive to be privately financed

TfL and Greater London Authority (“GLA”) unveil case for investment in Crossrail based on economic growth potential; with Mayor of London and London First (advocacy group), initiate outreach to business interests

CLRL transferred to TfL and granted powers to build Crossrail by Act of Parliament

Agreement reached for Canary Wharf Group plc (“CWG”) to construct the Isle of Dogs (now Canary Wharf) Station for a fixed price, contribute £150m to construction cost and absorb any price risk

Construction “breaks ground” at Canary Wharf

Mayor of London levies annual “Business Rate Supplement” tax of £0.02 per £1.00 of value on properties valued over £55,000 to pay for up to £3.5 billion for Crossrail, an idea proposed by CWG in 2002

Crossrail Place opens; station handed over to Crossrail

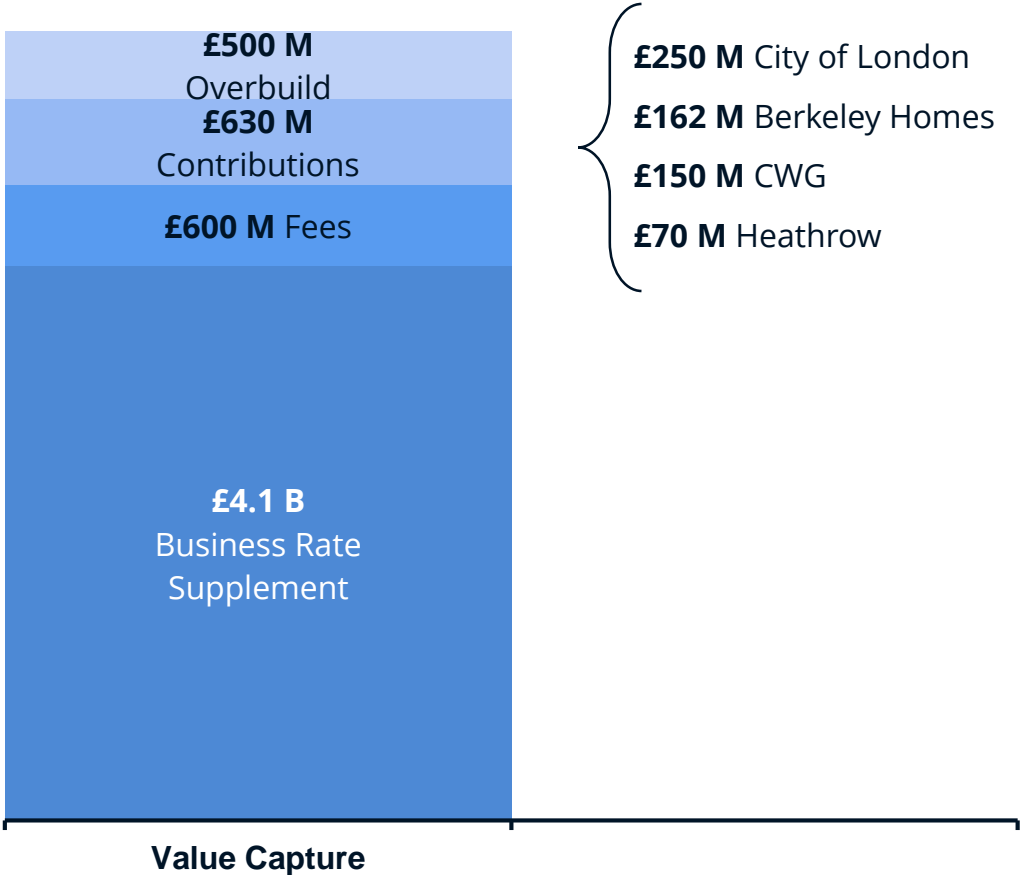
Canary Wharf station anticipated to receive Crossrail services

Canary Wharf: Crossrail Funding Sources | Value capture amounted to roughly one-third of the overall £15.9 billion cost of the Crossrail project.

Public Advocacy: A key component to success was the close coordination with key business interests, including through business advocacy group London First, in communicating project benefits and potential pitfalls of a no-build scenario. CWG was an initial proponent of the project, and proposed the Business Rate Supplement that contributed over half of local funding needs (an amount just short of DfT’s £4.8 billion in direct funding).

Value Capture: Property tax levies (totaling £4.1 billion in “Business Rate Supplements”) and direct funding amount to a vast majority of funding sources for Crossrail, but TfL was able to leverage almost £1.7 billion in additional value capture. These included:

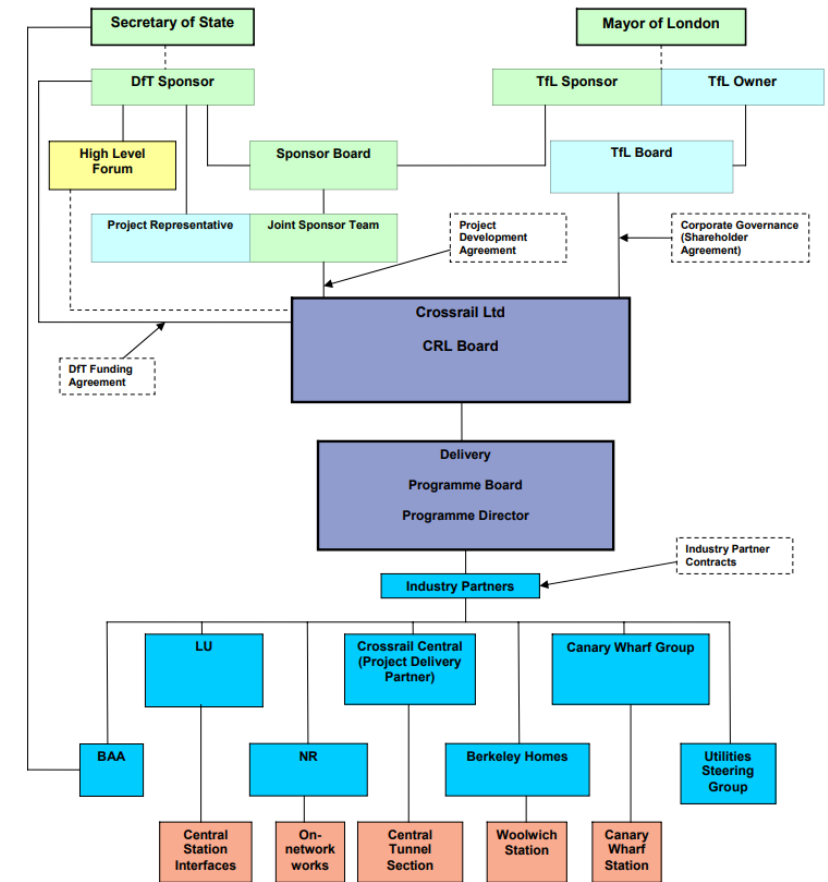
- **Allocation of development fees** by the Mayor of London of a portion of *Section 106* and *Community Infrastructure Levy* obligations paid by developers when building new office space
- **Voluntary, but negotiated contributions** by key property owners positively impacted by Crossrail, including a £162 million contribution by Berkeley Homes for the construction of the Woolwich Station, which was not anticipated in initial planning documents.
- **12 Overbuild** opportunities for roughly 3 million square feet of development, which are anticipated to generate roughly £500 million.



Canary Wharf: Canary Wharf Transaction | Although the negotiation process with CWG was contentious, the Station was delivered on time and under budget.

CWG Crossrail Lobbying and Negotiation: During the negotiation process, CWG unsuccessfully petitioned the House of Lords to limit Crossrail’s ability to extend its occupation of property adjacent to the station site to CWG if CWG did not construct the station or the Crossrail project was delayed. Although CWG was unsuccessful in its petition, their final agreement included a £15 million annual penalty (up to £150 million) payable by TfL for service commencement delays beyond 2020 or for failure to meet service obligations.

Transaction Structure: Crossrail Ltd, the delivery vehicle for construction of the new line, contracted with a number of “Industry Partners” for the delivery of various components of the project, including a purpose-built construction entity and CWG. CWG was responsible for the financing, design and construction of the Canary Wharf Station, and contributed £150 million to an estimated construction cost of £500 million, in addition to absorbing all price risk associated with the project. CWG delivered the station under budget and ahead of schedule, and claims that innovative design and delivery allowed for a 40 percent cost reduction below original estimates. MTR, under contract to TfL, will operate the Crossrail station, which is owned by TfL, CWG operates the retail, leisure and rooftop garden under a long-term lease.



Source: Mayor of London

Canary Wharf: Canary Wharf History | Crossrail will strengthen Canary Wharf's competitive position, cutting travel times to Central London and Heathrow by 15 minutes.

Ownership/Control: The CWG is a publicly-traded company formed in 1993 to acquire the assets of a bankrupt company. A majority is now controlled by the China Investment Corporation after bailing out the previous ownership group during the Great Recession. CWG controls about half of all property within Canary Wharf, valued at almost £5 billion.

Buildout and Scale of Development: Canary Wharf comprises roughly 100 acres on the river Thames. After the 1981 creation of the London Docklands Development Corporation and 1987 opening of the Docklands Light Railway metro system, connecting to the City of London and London City Airport; the project was sold to a company that went bankrupt shortly after construction of the first buildings in 1991. Better market timing and the initiation of construction of the Jubilee Line connecting to Westminster and the South Bank of the Thames supported substantial construction through the early 2000s, with roughly 16 million SF of commercial office and retail space currently completed. 100,000 employees currently work at Canary Wharf, a figure which is anticipated to double by 2025.

Impact of Crossrail: CWG saw substantial benefit from an agreement to contribute £500 million, or roughly 15% of the cost of the Jubilee Line. Studies produced in 2012 suggested that Crossrail would have a substantial impact on the demand and delivery for housing, with additional demand of roughly 17,000 units anticipated at Canary Wharf. The study anticipated overall property value growth of roughly 18 percent associated with Crossrail.

Canary Wharf: Key Takeaways | The Canary Wharf station was just one component of an effective and combined advocacy and value capture strategy.

- Early business support was critical to later strategies that closed substantial funding gaps for the Crossrail project through various tax levies, contributions, and development fees.
- Developers of Canary Wharf and Royal Arsenal Riverside in Woolwich stood to benefit significant from the delivery of the overall Crossrail system and specific stations, and as such were motivated to build stations on behalf of Crossrail and TfL. Both development projects included several million square feet of commercial and residential development, with equal or greater amounts of development in the pipeline. Value premiums associated with meaningful reductions in travel time to Central London are likely to be substantial.
- At Canary Wharf, CWG pushed for strict guarantees that Crossrail would be completed on schedule, given that construction staging limited development potential on sites adjacent to the station. Although this was unsuccessful, the station development agreement included significant penalties for delayed delivery of the project or levels of service below expectations.

Joint Development Partnership Model

