



More Development For Your Transit Dollar

An Analysis of 21 North American Transit Corridors

By Walter Hook, Stephanie Lotshaw, and Annie Weinstock



More Development For Your Transit Dollar

An Analysis of 21 North American Transit Corridors

By Walter Hook, Stephanie Lotshaw, and Annie Weinstock

More Development for Your Transit Dollar:
An Analysis of 21 North American Transit Corridors

Cover Photo: Cleveland's HealthLine BRT has helped leverage \$5.8 billion dollars of TOD investment since its opening in 2008.

Cover Photo By: Matthew Collins



ITDP

Institute for Transportation
& Development Policy

9 East 19th Street, 7th Floor, New York, NY, 10003

TEL +1 212 629 8001

www.itdp.org

WITH SUPPORT FROM



FORDFOUNDATION

CONTENTS

<u>Executive Summary</u>	6	CHAPTER 3	
<u>Acronyms and Abbreviations</u>	16	<u>Government Interventions</u>	57
<u>Introduction</u>	14	Agencies, Authorities, and Other Institutions	58
CHAPTER 1		Regional Planning Agencies	59
<u>Mass Transit Options for TOD</u>	18	Redevelopment Authorities	60
BRT, LRT, and Streetcar	19	City and State Agencies and Transit Authorities	66
Comparing the Costs	20	Community Development Corporations	68
Comparing the Capacities	22	Local Initiatives Support Corporation (LISC)	69
Comparing Speeds and Operations	24	Other Community-level Nonprofits	70
Comparing Ridership	36	Foundations	70
Implementation Speed, Phasing, and Environmental Impacts	28	Business Improvement Districts (BIDs)	70
Assessing the Quality of Surface Mass Transit	30	Comprehensive Planning	72
CHAPTER 2		Station–area Planning	75
<u>Preexisting Factors</u>	36	Zoning	76
<u>Supporting TOD</u>		Citywide Zoning Codes	77
Regional Market Strength	38	Area-specific Zoning	80
Market Strength of Land Served by New Surface Mass Transit	40	Incentive Zoning	82
Land with Limited Development Potential	44	Financing Mechanisms	84
Land with Strong Development Potential	47	Tax Increment Financing	87
Downtowns and Other Transit-Oriented Hubs	48	Favorable Loans to Developers	88
Waterfronts and Historical Assets	53	Tax Abatement Programs	88
Land with Emerging Development Potential	55	Grants	88
		Capital Improvements	90
		Land Assembly	91

CHAPTER 4

BRT, LRT, Streetcar

and Their Impacts on TOD

Analyzing the Causes of TOD Impacts	94
Other Factors Affecting TOD	99
Corridors with Weak TOD Impacts	100
Corridors with Moderate TOD Impacts	104
Corridors with Strong TOD Impacts	112
Comparing TOD Impacts of BRT, LRT, and Streetcars	118

CHAPTER 5

Two Case Studies:

How Cleveland and

Pittsburgh Successfully

Captured Development

Around their BRTs

120

Reviving Millionaire's Row: Cleveland's HealthLine BRT System	121
Background	122
The HealthLine BRT System	124
Community Development Corporations	126
Municipal Planning and Zoning	126
Financing	129
Current Development: Downtown, University Circle and MidTown	133
Preparing the Land	138
The First MidTown Development	139
The Euclid Corridor and Affordable Housing	140
Reinventing Pittsburgh's East Liberty BRT Station	142
Background	143
The Martin Luther King, Jr. East Busway BRT	144
Early Private Initiatives to Redevelop East Liberty	145
Affordable Housing in East Liberty	151
TOD in East Liberty	152

Conclusion

154

Acknowledgements

156

Notes

158

EXECUTIVE SUMMARY

In the wake of the 2008 economic downturn, Cleveland, Ohio, along with other former industrial US cities, faced severe financial difficulties. While a tough regional economy and shrinking population forced many of the surrounding cities to cut public services and reduce jobs in the public and private sectors, Cleveland managed to transform a modest \$50 million investment in bus rapid transit into \$5.8 billion in new transit-oriented development. By putting bus rapid transit (BRT) along a strategic corridor and concentrating government redevelopment efforts there, Cleveland managed to leverage \$114.54 dollars of new transit-oriented investment for every dollar it invested into the BRT system, adding jobs and revitalizing the city center.

A growing number of American cities are promoting transit-oriented development¹ (TOD) in order to combat congestion and other problems associated with sprawling, car-dominated suburban growth. Many are planning rail-based mass transit investments like light rail transit (LRT) and streetcars, hoping they will stimulate transit-oriented development, but are finding the costs to be crippling.

Increasingly, cities in the US, finding themselves short of funds, are wondering whether BRT, a lower cost mass transit solution initially developed in Latin America and a relatively new form of mass transit in the US, could also be used here to leverage transit-oriented development investments.

Cleveland is not the only success story. Pittsburgh, Las Vegas, Ottawa, and Eugene all received returns on their investments into BRT. This report evaluated 21 LRT, BRT, and streetcar corridors in 13 cities across the US and Canada and features case studies on the successes in Cleveland, Ohio and Pittsburgh, Pennsylvania. To make it possible to compare systems of similar quality, it uses *The BRT Standard*, a new tool developed by the world's leading BRT experts, which defines and evaluates the quality of BRT and has encouraged a more rigorous distinction between bus improvement and this new form of transit. As many of the most important attributes of BRT are also important attributes of LRT, we were able to use *The BRT Standard* to score LRT corridors as well.

In the past decade, the emergence of seven new corridors in the US that have ranked as true BRT has been a major step in establishing a new paradigm for transit.

While the belief that LRT is more likely to have significant TOD impacts than BRT is widespread, the matter had not, until now, been systematically studied.

The report found the following:

Per dollar of transit investment, and under similar conditions, Bus Rapid Transit leverages more transit-oriented development investment than Light Rail Transit or streetcars.

Cleveland's HealthLine BRT and Portland's MAX Blue Line LRT leveraged the most overall TOD investment of all the corridors we studied — \$5.8 billion and \$6.6 billion, respectively. Yet, because the HealthLine BRT cost significantly less to build than the MAX Blue Line LRT, Cleveland's HealthLine BRT leveraged approximately 31 times more TOD investment per dollar spent on transit than Portland's MAX Blue Line LRT.

Both BRT and LRT can leverage many times more TOD investment than they cost.

Of the 21 corridors we studied, 14 leveraged greater than \$1 of TOD investment per \$1 of transit spent. Five of them were BRT, four of them were LRT, two were streetcars, and three were improved bus (non-BRT) corridors.

Government support for TOD is the strongest predictor of success.

A government that sees potential in a site for development can provide a range of support from regulatory changes to financing to marketing of the area. There is nearly a direct correlation between the level of TOD investment and the strength of government support. If a government does nothing to support TOD along the transit corridor, there will be no TOD impact.

The strength of the land market around the transit corridor is the secondary indicator of success.

Where governments provide moderate support for TOD, the existing market strength of the land determines the level of TOD investment. Today, downtowns tend to be strong land markets, so having the transit investment pass through downtown leads to better TOD impacts.

The quality of the transit investment — how well it meets the best-practices detailed in the *BRT Standard* — is the tertiary indicator of success.

Holding constant for level of government support and potential of the land to develop, the quality of the transit investment is generally the final indicator of the level of TOD investment.














Cleveland emerges as a clear best practice. Despite Cleveland's weak overall economy, it managed to take a \$5 million per mile transit investment and leverage \$5.8 billion in new development. Of course, this new development was by no means the result of the transit investment alone. The City made a concerted effort to channel new development to the HealthLine. It found the right institutional partners — including strong community development corporations, private foundations and municipal agencies — which in turn accessed a wide variety of financing options, assembled land, and worked closely with developers.

Strong political backing and a high-quality BRT, supplemented by public parks, landscaping, fiber optic cables, and other modern amenities, all came together to begin to revitalize Cleveland.

Pittsburgh's Martin Luther King, Jr. East Busway BRT is quickly becoming a second success. While it has so far leveraged less overall investment than some of the other transit corridors we studied, the development is new and is happening rapidly. This BRT has been operational since 1983 and yet only in the last few years has development really taken off. It is a testament to the need for a strong planning effort but shows that this effort does not have to be initiated by the city. Most of the development that has occurred in the East Liberty neighborhood, adjacent to East Liberty BRT Station, has been the result of a concerted effort by East Liberty Development, Inc. (ELDI) and the local philanthropic community.

Cities in the US still have a way to go in transforming existing auto-oriented suburbs or blighted inner urban areas into vibrant, high quality transit-oriented communities. This report provides start-to-finish guidance on what it takes to make TOD happen.

Typology of TOD Impacts and all other relevant factors.²

CORRIDOR	BRT STANDARD	LAND POTENTIAL	GOVERNMENT TOD SUPPORT	TOD INVESTMENT (MILLIONS)	TOD INVESTMENT PER DOLLAR OF TRANSIT INVESTMENT (MILLIONS)
STRONG TOD IMPACTS					
Cleveland HealthLine BRT		Emerging	Strong	\$5,800	\$114.54
Kansas City Main Street Metro Area Express (MAX) bus	Below Basic	Strong	Strong	\$5,200	\$101.96
Seattle South Lake Union (SLU) Streetcar	Below Basic	Strong	Strong	\$3,000	\$53.57
Portland Streetcar	Below Basic	Strong	Strong	\$4,500	\$41.48
Portland MAX Blue Line LRT		Emerging	Strong	\$6,600	\$3.74
MODERATE TOD IMPACTS					
Las Vegas Strip & Downtown Express (SDX) BRT		Strong	Moderate	\$2,000	\$42.28
Boston Washington Street Silver Line bus	Below Basic	Emerging	Moderate	\$650	\$20.97
Denver Central Corridor LRT		Strong	Moderate	\$2,550	\$14.88
Eugene Emerald Express Green Line (EmX) BRT		Emerging	Moderate	\$100	\$3.96
Pittsburgh Martin Luther King, Jr. East Busway BRT		Emerging	Moderate	\$903	\$3.59
Phoenix Metro LRT		Emerging	Moderate	\$2,820	\$1.99
Ottawa Transitway BRT		Emerging	Moderate	\$1,000	\$1.71
Charlotte Lynx LRT		Emerging	Moderate	\$810.20	\$1.66
Boston Waterfront Silver Line bus	Below Basic	Strong	Moderate	\$1,000	\$1.39
Los Angeles Orange Line BRT		Emerging	Moderate	\$300	\$0.83
Denver Southwest Corridor LRT		Limited	Moderate	\$160	\$0.71
WEAK TOD IMPACTS					
Ottawa O-Train LRT		Limited	Weak	nominal	nominal
Pittsburgh "The T" LRT		Limited	Weak	nominal	nominal
Las Vegas Metropolitan Area Express (MAX) bus	Below Basic	Limited	Weak	nominal	nominal
Pittsburgh West Busway BRT	Basic BRT	Limited	Weak	nominal	nominal
Pittsburgh South Busway BRT	Basic BRT	Limited	Weak	nominal	nominal

 BRT Standard Gold  BRT Standard Silver  BRT Standard Bronze

ACRONYMS AND ABBREVIATIONS

BID	Business Improvement District
BRT	Bus Rapid Transit
CATS	Charlotte Area Transit System (Charlotte, North Carolina)
CDBG	Community Development Block Grant
CDC	Community Development Corporation
CDP	Community Development Partnership
COG	Council Of Government
CTOD	Center for Transit Oriented Development
DRCOG	Denver Regional Council of Governments (Denver, Colorado)
EDI	Economic Development Initiative (U.S. Dept. of Housing and Urban Development)
ELDI	East Liberty Development, Inc. (Pittsburgh, Pennsylvania)
FAR	Floor Area Ratio
FTA	Federal Transit Administration
GCRTA	Greater Cleveland Regional Transport Authority
HTC	Health-Tech Corridor (Cleveland, Ohio)
KCEDC	Kansas City Economic Development Corporation (Kansas City, Missouri)
LCLIP	Landscape Conservation and Local Infrastructure Program (Seattle, Washington)
LCOG	Lane Council of Governments (Eugene, Oregon)
LISC	Local Initiatives Support Corporation
LRT	Light Rail Transit
MPO	Metropolitan Planning Organization
MBTA	Massachusetts Bay Transportation Authority
NOACA	Northeast Ohio Areawide Coordinating Agency
NPI	Neighborhood Progress, Inc. (Cleveland, Ohio)
PDC	Portland Development Commission (Portland, Oregon)
PPHPD	People per Peak Hour per Direction
RAD	Regional Asset District (Pittsburgh, Pennsylvania)
RIT	Rede Integrada De Transporte (Curitiba, Brazil)
SCF	Sustainable Communities Fund (Phoenix, Arizona)
TDR	Transferable Development Rights
TIF	Tax Increment Financing
TOD	Transit-Oriented Development
TRID	Transit Revitalization Investment District (Pennsylvania).
URA	Urban Redevelopment Authority of Pittsburgh (Pittsburgh, Pennsylvania)

Introduction

Cities across the US are increasingly using mass transit investments to focus new urban growth in specific locations or corridors. Directing urban growth toward high-density, transit-oriented locations has numerous advantages, such as reducing government infrastructure costs and reducing traffic congestion, preserving land, and creating the more urban, less car-oriented environments that many young professionals desire.³

There is sufficient evidence that metro or subway systems, if coupled with zoning changes and other government interventions, can effectively concentrate new urban growth in transit-oriented locations. New York City, for instance, up-zoned around many of its subway stations during the last ten years, and land within walking distance of subway stations has captured 87% of the city's new urban development.⁴ Transit-oriented subcenters have also sprung up around many of Washington, DC's metro stations, attracting 40% of the region's office and retail space between 1980 and 1990.⁵



Guangzhou has rapidly
densified around the GBRT
corridor since the BRT
opening in 2010.

WU WENBIN



A growing number of US cities are finding, however, that metro or subway systems are simply too expensive and take too long to implement to effect significant changes in ongoing trends toward suburban sprawl. As such, cities are turning to lower-cost mass transit options such as LRT, BRT, and streetcars. These systems, which frequently use surface streets, are much less expensive and can be built more quickly than heavy-rail subways or metro systems. Over the past decade, some evidence has emerged that some LRT systems in the US have had positive development impacts.⁶ Outside of the US, in cities like Curitiba, Brazil, and Guangzhou, China, there is copious evidence that BRT systems have successfully stimulated development. Curitiba's early silver-standard BRT corridors, completed in the 1970s, were developed together with a master plan that concentrated development along them. The population growth along the corridor rate was 98% between 1980 and 1985, compared to an average citywide population growth rate of only 9.5%.⁷ However, because bronze-, silver-, or gold-standard BRT is still relatively new to the US, evidence of the impact of good-quality BRT on domestic development is only now beginning to emerge and has been largely undocumented.

The purpose of this report is to systematically document the extent to which BRT and LRT systems and streetcars in the US and Canada have stimulated development and to explore the factors that have contributed to their success.

To accomplish this, we studied 21 surface mass transit corridors — BRT, LRT, and streetcar — in 13 cities across the US and Canada, listed to the right:



New York City's dense infill development around The High Line was a result of a revised zoning effort by the city.
ITDP

We visited all but the Metro LRT in Phoenix and the Main Street MAX in Kansas City, conducting interviews and collecting data in each city. Throughout this paper we use these 21 case studies to discuss many of the issues surrounding different modes of surface mass transit and their potential to stimulate development.

- BUS **Waterfront Silver Line bus:** Boston, Massachusetts
- BUS **Washington Street Silver Line bus:** Boston, Massachusetts
- LRT **Lynx LRT:** Charlotte, North Carolina
- BRT **HealthLine BRT:** Cleveland, Ohio
- LRT **Central Corridor LRT:** Denver, Colorado
- LRT **Southwest Corridor LRT:** Denver, Colorado
- BRT **Emerald Express Green Line (EmX) BRT:** Eugene, Oregon
- BUS **Main Street Metro Area Express (MAX) bus:** Kansas City, Missouri
- BRT **Strip & Downtown Express (SDX) BRT:** Las Vegas, Nevada
- BUS **Metropolitan Area Express (MAX) bus:** Las Vegas, Nevada
- BRT **Orange Line BRT:** Los Angeles, California
- BRT **Transitway BRT:** Ottawa, Ontario
- LRT **O-Train:** Ottawa, Ontario
- LRT **Metro LRT:** Phoenix, Arizona
- BRT **Martin Luther King, Jr. East Busway BRT:** Pittsburgh, Pennsylvania
- BRT **South Busway BRT:** Pittsburgh, Pennsylvania
- BRT **West Busway BRT:** Pittsburgh, Pennsylvania
- LRT **“The T” LRT:** Pittsburgh, Pennsylvania
- LRT **MAX Blue Line LRT:** Portland, Oregon
- SC **Streetcar:** Portland, Oregon
- SC **South Lake Union (SLU) Streetcar:** Seattle, Washington

BRT Bus Rapid Transit BUS Bus SC Streetcar LRT Light Rail Transit

CHAPTER 1

Mass Transit Options for TOD

As cities move toward denser, more urban-style development, mass transit plays a crucial role in the process. Dense development requires access to transport that can efficiently move the people who live and work in the area. The alternative—private automobile transport—quickly leads to congested urban streets, neighborhoods, and cities, rendering these areas polluted, chaotic, and unlivable.

Many cities, therefore, consider investing in mass transit to stimulate the hoped-for development.⁸ Indeed, a good mass transit investment can be such a catalyst. Yet city planners and politicians, who do not always work closely with transportation professionals, commonly begin to view mass transit in and of itself as a silver-bullet solution for stimulating development. Often the result is a mass transit project designed without careful thought to how it addresses current and future mobility needs. For example, streetcars in mixed traffic may look nice and may even be part of a larger development package, but they rarely provide the mobility afforded by higher-quality light rail transit (LRT) or bus rapid transit (BRT). Transit designed without thought to future mobility needs can sometimes be detrimental to the success of a development, or, if the development is successful, it may result in high automobile use or in residents seeking other mass transit options, such as standard bus lines. Thus, transit must first be designed to provide optimal mobility to the site.

Second, a transit investment and its stations must be attractive and permanent enough to persuade potential developers and tenants to locate near it. Finally, no matter which mass transit option is selected, it must be affordable to the city and implementable within a reasonable time frame.

This chapter discusses three transit modes—BRT, LRT, and streetcar—from this maximum mobility perspective and provides a tool for measuring the degree to which the system has been designed in a manner consistent with international best practices.

BRT, LRT, and Streetcars

BRT, LRT, and streetcars generally aim to achieve the same goals: an increase in speed, predictability, passenger comfort, and passenger capacity. All three modes can operate on surface streets and may or may not include important elements such as a dedicated running way, limited stops, off-board fare collection, minimized conflicts with traffic at intersections, safe, attractive and permanent stations, and high-capacity vehicles. If aligned to the central median in the road right-of-way, all three technologies benefit from speed increases by avoiding conflicts with right-turning traffic and slow or stopped taxis, bicycles, delivery vehicles, and other causes of delay typically found in the curb lane. However, LRT and streetcars both require tracks and catenary (overhead wires), while BRT can operate more or less on normal roads.



While true bus rapid transit (BRT) has more recently become common in the US, light rail transit (LRT) and streetcars are popular in many cities.

ITDP



Portland's MAX Blue Line LRT runs 33 miles from east to west.

ITDP

Comparing the Costs

As part of this report, ITDP collected capital cost data on the six best BRT and LRT corridors in the US, as well as on two streetcar corridors. While fully comparable cost data was difficult to come by, when all numbers were converted to 2010 dollars they indicated that on average, the cost per mile of BRT infrastructure was less than one-half that of similar-quality LRT or streetcar systems. At the same time, BRT provided a similar, or sometimes higher, quality of service. In most cases, the cost advantages of BRT were considerably greater.

Transit operating costs are more variable and harder to measure than capital costs. Not every city measures operating costs in the same way. For example, in addition to standard maintenance and operations, the cost of depreciating the rolling stock as well as the cost of maintenance and depreciation of the catenary of an LRT or streetcar should be included in operating cost figures. Frequently, however, these additional costs are not included. When they are, BRT is generally seen to be less expensive to operate than LRT. Obtaining accurate operating cost information that is corridor-specific has proven to be quite difficult for both BRT and LRT systems anywhere in the world.

In the developing world, the operating cost advantages of BRT over LRT or streetcar are greater than those in the US given relatively low labor costs in those countries. In the US, for the same level of ridership, higher labor costs tend to encourage transit operators to use fewer and larger vehicles and to operate them at lower frequencies to minimize the number of drivers needed. This comes at a hidden cost to passengers, who experience longer waiting times associated with these lower frequencies.

In the US and Canada, some project-specific data indicate that the operating costs of BRT are still lower than those of LRT. Although LRT operates at lower frequencies and therefore requires fewer drivers, maintenance costs for BRT are typically lower than LRT, partly due to the high cost of maintaining and depreciating the catenary on LRT systems. (Furthermore, in the US the lower frequencies of LRTs are a problem because they do not entice people to make the switch to mass transit.)

One distinct advantage of the low operating cost of BRT versus LRT is that BRT services generally replace conventional bus services, assume their operating costs, and reduce those costs through operational efficiencies. LRT, on the other hand, sometimes duplicates conventional bus services and competes with those services for ridership, thus increasing total transit agency operating losses. However, the potential operational savings for any system depends entirely on the service changes introduced as part of the new system.



Los Angeles' Gold Line LRT runs 19.7 miles from Pasadena to East Los Angeles and has overhead catenary wires.

KARL FJELLSTROM, ITDP



In Bogotá, Colombia, attendants collect fares prior to entering the station, which isn't a large addition to operating costs since labor costs are low.

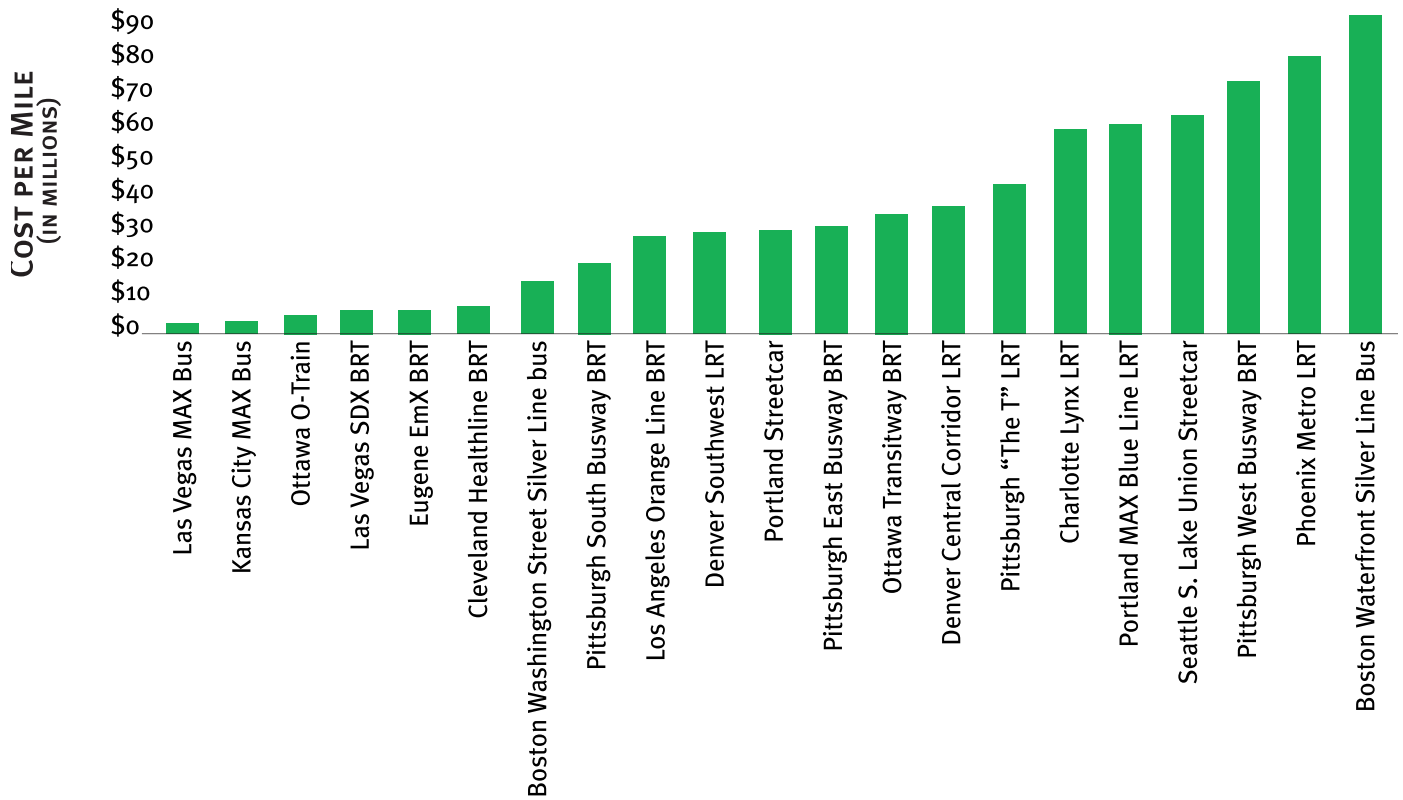
KARL FJELLSTROM, ITDP



The three services — Portland's light rail, bus and streetcar — that operate in Portland's downtown increases costs.

ITDP

BRT, LRT AND STREETCAR CAPITAL COST PER MILE ^{9,10}



Graph 1. Capital Cost per mile of BRT, LRT and Streetcar in 2010 US dollars.

Comparing the Capacities

After the world's first BRT system opened in Curitiba, Brazil, in 1974, cities were slow to adopt BRT because they believed that its capacity was limited to about 12,000 people per peak hour per direction (PPHPD) – which was Curitiba's capacity at the time. While this capacity is rarely needed in the US (where 12,000 people is more typical of the total daily ridership), in the developing world this capacity constraint was a significant argument in favor of heavy-rail metro investments in some venues. This capacity estimate increased to 16,000 with vehicular convoing (i.e., multiple vehicles traveling in close proximity) in São Paulo, Brazil, but proved hard to maintain. When Curitiba introduced bi-articulated buses, capacity increased to about 16,000 PPHPD without convoing.

When the TransMilenio system in Bogotá, Colombia, opened in 1998, it changed the paradigm for limited BRT capacities by providing a lane for buses to pass each other at each station and multiple sub-stops at each station; and by introducing express services within the BRT infrastructure. These innovations increased the maximum achieved capacity of a BRT system to 35,000 PPHPD. Light rail, by comparison, has a maximum theoretical capacity of about 20,000 PPHPD,¹¹ but these levels have rarely if ever been achieved under real-world conditions, and they require very long multicar vehicles on fully grade-separated rights-of-way (either elevated, as in Manila, the Philippines, or underground). On normal city streets, the highest-capacity LRT systems are in Europe, and they typically carry a maximum of about 9,000 PPHPD. There are conditions that favor LRT over BRT, but they are fairly narrow. Meeting these conditions would require a corridor with only one available lane in each direction, more than 16,000 but fewer than 20,000 PPHPD, and a long block length, so the train does not block intersections. These specific conditions are rare, but where they exist, light rail would have an operational advantage. Otherwise, any perceived advantages of LRT over BRT are primarily aesthetic and political rather than technical.



Seattle's South Lake Union Streetcar operates in mixed traffic with other vehicles, meaning a slower ride.

FLICKR BY GABOFR



TransMilenio's passing lanes at stations have increased the capacity of the system threefold.
KARL FJELLSTROM, ITDP

In the US, current transit capacities are significantly lower than those of the BRT and LRT systems mentioned above. This is because domestic capacity is measured as a function of the number of vehicles currently serving the corridor (at peak hour, in peak direction), and the physical capacity of those vehicles. Yet no corridor in the US has sufficient demand to justify vehicular frequencies high enough to saturate the corridor. For example, the current capacity of Los Angeles' Orange Line BRT is 1,965 PPHPD based on the existing fleet. However, the system's theoretical capacity is much higher: were demand to grow and more vehicles put into service, capacity would increase. The LRT corridors in Los Angeles — the Gold Line and the Blue Line — have similar capacities based on the existing fleet: 2,090 PPHPD. This capacity, too, could grow with an increase in demand. Note, however, that in order to provide capacities that more or less meet current demand, Los Angeles provides less frequent services on its LRT lines due to the size of the LRT vehicles.

US cities generally search for the sweet spot in the demand-to-capacity ratio and try not to provide service frequencies that are so high that their vehicles run empty. Thus, since LRT vehicles are larger, in order to justify providing LRT capacities that are similar to a BRT, LRT tends to operate at lower frequencies. As mentioned above, due to the perceived capacity constraint of BRT

there are currently no cases in the US where LRT should be favored over BRT.

Comparing Speeds and Operations

Speeds on the systems we compared were within a similar range. The two main factors that explain the difference in speeds between BRT and LRT systems are 1) the distance between station stops, and 2) the existence or non-existence of a transitway. Table 1, to the right, provides speeds for the systems we studied and for some international systems, for comparison.

BRT, however, has a distinct operational advantage over LRT: A BRT vehicle can operate in mixed traffic on normal streets and then enter dedicated BRT infrastructure without forcing passengers to transfer to another vehicle. LRT, by contrast, can only operate where there are rail tracks, and passengers coming from locations not served by the tracks must transfer to and from buses, or to space-consuming park-and-rides, in order to use the system. A transfer can pose significant delays and inconvenience to passengers and is sometimes enough to turn people away from mass transit.

It is also easier to introduce express- and limited-stop services into BRT systems, since an express bus simply needs a passing lane at stations or the ability to pass in a regular traffic lane at stations, whereas rail-based transit systems essentially require double-tracking throughout for express services. At an average cost of \$41 million per mile, double-tracking rail is generally prohibitively expensive. Often, a conventional bus route ends up serving a limited- or express-stop service parallel to light rail but without the benefits of the LRT infrastructure. Express services are one of the most important ways to increase bus speeds. It was the introduction of a large number of express services to Bogotá's TransMilenio that resulted in that system's high average speeds and capacities.

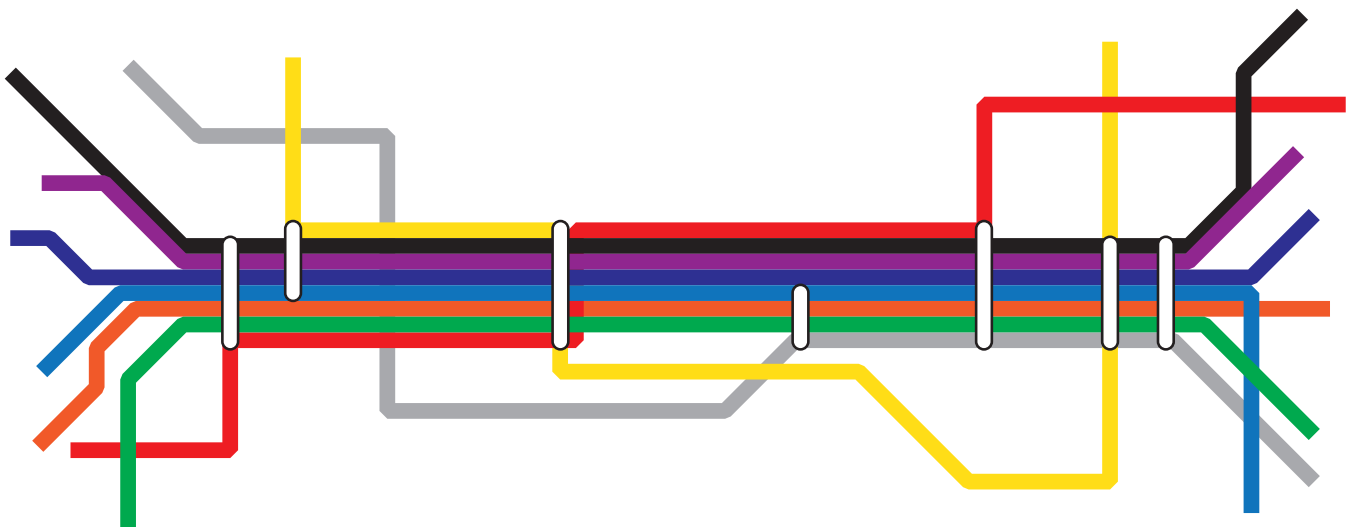




Table 1. BRT, LRT and Streetcar average speeds in kilometers per hour.¹²

	CORRIDOR	SPEED (MPH)
BRT	Ottawa Transitway	50
LRT	Charlotte Lynx	35
BRT	Pittsburgh Martin Luther King Jr. East Busway	30
BRT	Pittsburgh West Busway	30
BRT	Pittsburgh South Busway	28
LRT	Ottawa O-Train	25
LRT	Portland MAX Blue Line	18.6
BRT	Bogotá, Colombia TransMilenio	16.7
LRT	Pittsburgh “The T”	16
BRT	Curitiba, Brazil, Linha Verde	15.5
BRT	Ahmedabad, India, Janmarg	14.9
LRT	Denver Central Corridor	14
LRT	Denver Southwest Corridor	14
BRT	Guangzhou, China, GBRT	14
BUS	Kansas City Main Street Metro Area Express (MAX)	14
BUS	Las Vegas Metropolitan Area Express (MAX)	13.6
BRT	Las Vegas Strip & Downtown Express (SDX)	12.4
BUS	Boston Waterfront Silver Line	12.4
LRT	Phoenix Metro	11.5
BRT	Curitiba, Brazil, RIT Corridors	11.3
BRT	Los Angeles Orange Line	11.2
BRT	Cleveland HealthLine	11
LRT	Budapest, Hungary, Grand Boulevard	11
BRT	Mexico City, Mexico, Insurgentes Corridor	10.8
BRT	Eugene Emerald Express Green Line (EmX)	10.5
SC	Portland Streetcar	9.9
BUS	Boston Washington Street Silver Line	8
SC	Seattle South Lake Union (SLU) Streetcar	5

ABOVE LEFT:
Guangzhou’s direct services allow for a quicker and more comfortable ride than before the BRT (below photo).

KARL FJELLSTROM, ITDP

BELOW LEFT:
THE COST OF DOUBLE-TRACKING WAS TOO HIGH TO ADD PASSING LANES TO CHARLOTTE’S LYNX CORRIDOR.

FLICKR BY JAMES WILLAMORE

BELOW BOTTOM:
Designing multiple routes that operate along a single corridor and also go to different destinations reduces door-to-door travel times. ITDP

THIS PAGE
Denver’s light rail lines run right through downtown Denver.

FLICKR BY RACTOD

BRT Bus Rapid Transit BUS Bus SC Streetcar LRT Light Rail Transit

Comparing Ridership

Ridership on the corridors we studied was primarily a function of the innate demand characteristics of the corridor, but to some degree it also reflected the quality of the service planning. Table 2 compares corridor-specific daily ridership between the systems we studied as well as several of the high-performing international corridors.

As mentioned above, ridership can indicate the innate demand characteristics of a corridor. A corridor with preexisting demand and/or high densities will likely have high ridership when a new mass transit system is implemented. But high ridership can also suggest that the services that are designed to use the corridor serve the highest potential number of riders who live or work near the corridor. Providing service types that reduce total travel time for passengers encourages ridership. In Guangzhou, the Zhongshan Avenue GBRT has services that exit the corridor and continue to other neighborhoods. In both Bogotá and Curitiba, the BRT systems have multiple express, limited, and local service options. For LRT systems, it is difficult to offer multiple service types to alternative destinations, as services must remain on their tracks and cannot circulate around neighborhoods that are not served directly by the LRT infrastructure. This lack of flexibility can result in lower system ridership.

Table 2. BRT, LRT and Streetcar Daily Ridership. ¹³

CORRIDOR		AVERAGE DAILY WEEKDAY RIDERSHIP
BRT	Ottawa Transitway	244,000
LRT	Denver Central Corridor	62,782
LRT	Phoenix Metro	41,784
LRT	Portland MAX Blue Line	34,500
BRT	Los Angeles Orange Line	33,000
LRT	Pittsburgh "The T"	28,232
BRT	Pittsburgh Martin Luther King, Jr. East Busway	24,000
BUS	Boston Washington Street Silver Line	18,848
LRT	Denver Southwest Corridor	17,746
BRT	Las Vegas Strip & Downtown Express (SDX)	16,789
BRT	Cleveland HealthLine	15,800
LRT	Charlotte Lynx	14,000
BUS	Boston Waterfront Silver Line	13,602
SC	Portland Streetcar	11,400
BRT	Eugene Emerald Express Green Line (EmX)	10,000
BRT	Pittsburgh South Busway	9,262
LRT	Ottawa O-Train	9,000
BRT	Pittsburgh West Busway	8,419
BUS	Las Vegas Metropolitan Area Express (MAX)	7,400
BUS	Kansas City Main Street Metro Area Express (MAX)	5,400
SC	Seattle South Lake Union (SLU) Streetcar	3,000

BRT Bus Rapid Transit
 BUS Bus
 SC Streetcar
 LRT Light Rail Transit

Platform-level boarding on Lanzhou's LBRT saves travel time for everyone and makes boarding less cumbersome for the elderly or families with strollers.

ITDP



Implementation Speed, Phasing, and Environmental Impacts

Finally, a BRT can be designed and implemented within an extremely short time frame. A few very good projects around the world, like Guangzhou, went from a firm political commitment to implementation within eighteen months. A more reasonable time horizon is three to four years, as was the case for the Pittsburgh South Busway BRT and the Los Angeles Orange Line BRT. In many cities around the world, a major selling point for BRT is that mayors or governors are able to get the projects built and operational within a single term of office, as happened in Bogotá during the 1998–2001 term of Mayor Enrique Peñalosa. LRT projects tend to have much longer time horizons. This means that one politician can decide to build a BRT and preside at the ribbon cutting while a subsequent politician might make a promise to build LRT, only to have it realized by yet another politician years into the future. It also means that the mass transit and land use benefits will be felt much more quickly with BRT than with rail-based modes.

In addition, BRT provides much greater flexibility in terms of phasing. A city can build high-quality BRT along just a segment of an existing bus route where the BRT infrastructure is most needed, then extend this BRT infrastructure farther along the corridor as money becomes available and the need for these measures increases. The Ottawa Transitway BRT and Pittsburgh's BRT corridors developed in this phased manner. With LRT, operating a very short segment first rarely makes economic sense because of the transfers it forces onto passengers between rail and bus, or to their cars, at either end.

In any transit system, more passengers mean greater environmental benefit. To know the actual environmental impact of a mass transit project, one has to look at a number of factors: the impact the project has on modal shift (how many former motorists are using the new transit system), the vehicle miles traveled by the transit fleet before and after project implementation, the emissions related to construction, and the vehicle-specific emissions from the transit vehicles.



The first corridor of TransMilenio was implemented in Mayor Enrique Peñalosa's 3-year term.

ITDP



LEFT
Lima's bus fleet is made up of new CNG buses when the BRT was introduced.

KARL FJELLSTROM, ITDP



RIGHT
Demolishing and resurfacing streets for LRT or streetcar reconstruction generates a large amount of CO₂ emissions.

PORTLAND STREETCAR INC.

Because BRT systems tend to have catchment areas that are larger than those of LRT systems, they also tend to have greater modal shift. Curitiba is the only city in the world that maintained its share of public transit users for nearly three decades during the period of motorization (generally, as countries become richer, more people drive).

Many environmentalists support rail-based transit for environmental reasons, but to date only BRT projects have been certified as greenhouse gas-reduction projects by the Clean Development Mechanism defined in the Kyoto Protocol (see Bogotá and Mexico City).¹⁴ Additionally, the volume of vehicle-specific emissions that LRT and electric trolley bus systems produce depends on how their electric power is generated. If the source is coal-fired power plants, then the system may actually produce more CO₂ than normal diesel vehicles do, even though people are exposed to fewer emissions on the street. Buses are major producers of particulate emissions unless they use low-sulfur fuels, have particulate traps and clean engines, or run on some source of fuel that is an alternative to diesel. These particulate emissions are the main problem for BRT systems because the particles can become trapped in BRT stations and pose a significant health hazard. As such, BRT projects should also be used to introduce cleaner buses and cleaner fuels into the city's bus fleet. Jakarta, Indonesia, for instance, introduced the first Compressed Natural Gas (CNG) buses as part of its BRT system. Some cities like Quito, Peru, and São Paulo use electric trolley buses in their BRT systems, making these very similar to LRT systems, though in São Paulo the buses introduced operational problems due to poor catenary maintenance; and Quito experienced financial problems when electricity prices skyrocketed with power sector deregulation. A growing number of cities are looking to hybrid buses.

BRT also reduces bus sector emissions by increasing bus speeds and rationalizing bus routes, hence reducing the number of bus miles traveled. In cities with high bus traffic, this is sometimes the main source of emissions reductions from a BRT project. Compared to rail systems, BRT systems also tend to be less intensive users of concrete and steel. Producing steel and concrete and building underground or elevated concrete structures generates a large amount of CO₂. Many heavy-rail metro projects cannot reduce enough operations-related carbon emissions during their first twenty years to compensate for their construction-related CO₂ emissions. Surface LRT generates less construction-related CO₂ but still tends to generate more than a BRT project does.

Assessing The Quality of Surface Mass Transit



At the Giangding station, the Guangzhou BRT has 3 sub-stops each with 3 docking bays to allow for local, limited and express services.

KARL FJELLSTROM, ITDP

While there is some ambiguity surrounding the definition of different rail-based mass transit systems, it is generally understood what makes an LRT an LRT and what makes a streetcar a streetcar. There has been far greater ambiguity surrounding the notion of what, exactly, constitutes BRT. The lack of a common definition for BRT has caused confusion in discussions about the technology since its inception. However, as a result of a rapidly growing body of experience with BRT, today the international BRT technical community has a much better understanding of the essential elements of a successful BRT than it did a decade ago.

Until recently, the absence of such an agreement among planners and engineers meant that for every new world-class BRT corridor, dozens opened that lacked many of the essential features of BRT. The residents and decision-makers in cities where these systems were built were largely unaware of the differences between their systems and the world's best BRT systems. Similar to what happened in Brazil in the 1980s, in a growing number of such cities the public and political leaders came to associate BRT with a quality of service significantly inferior to what was expected from rail-based alternatives. This phenomenon occurred in countries ranging from the United States to China, India, and Indonesia. In a few cases, some new systems that were identified as BRT actually made conditions worse for many transit passengers.

The lack of understanding of what constitutes a BRT system has led to branding problems. The absence of any sort of quality control has allowed marginal bus system improvements to be branded as BRT, leading to some community backlash against the concept of BRT. Modest incremental improvements, while sometimes beneficial to bus riders, are often not the most cost-effective solution. They certainly do not add up to the fundamental change needed to shift the travel paradigm from a dispersed pattern of private automobile travel to bus-based mass transit.

In 2010, *The BRT Standard*¹⁵ was introduced by a committee composed of the world's leading BRT experts. *The BRT Standard* lays out the essential elements of BRT and provides a framework for system designers, decision makers, and the sustainable transport community to implement and identify top-quality BRT. The best BRT corridors are those that combine efficiency and sustainability with passenger comfort and convenience. *The BRT Standard* uses design characteristics that have been proven to correlate with enhanced performance and superior customer experience. The measures that receive points under *The BRT Standard* have been evaluated in a wide variety of contexts, in both the developing and developed world, and in high-demand and low-demand systems. These elements are generally easily recognizable and simple to score without a massive data collection process. This evaluation method celebrates high-quality BRTs but is not intended to denigrate lighter BRT improvements, or even improvements to conventional bus systems, that may also yield important benefits to customers. Under *The BRT Standard*, a corridor of a BRT system can be certified as gold-standard, silver-standard, or bronze-standard.



***The BRT Standard* is an international standard for best practice in BRT design.**

ITDP

Although it is easier to judge whether an LRT project is truly an LRT, a quality standard similar to *The BRT Standard* also exists for LRT systems. Yet it turns out that LRT systems often suffer from many of the same design flaws present in weaker BRT systems: the lack of a dedicated runningway, and of curbside or curb-adjacent alignment, at-level boarding, and prepaid boarding, among other features. In fact, the most important attributes of BRT in terms of speed and capacity are also the most important attributes of high-quality LRT or streetcar, with only minor divergences. As such, it is also possible to score the LRT, BRT, and streetcar systems we studied using the same *BRT Standard* scoring system. Table 3, right, shows the rankings of the systems we studied, along with some international systems for comparison:

As shown to the right, LRTs scored using *The BRT Standard* almost consistently score in the bronze range. Of the LRT corridors we investigated, only the Portland MAX Blue Line scores silver. This is largely due to a lack of flexibility in service types that results from rigid tracks. In addition, despite a common assumption that LRTs have platform-level boarding, many of those examined for this report had a significant number of stations without this feature. Finally, peak frequencies for many LRTs average 7–10 minutes, significantly less frequent than many BRTs. This is due to the high capital costs of LRT vehicles, which make them more expensive to purchase and operate at high frequencies. As a result, even though LRTs are less commonly technically diluted, the cost of their fixed infrastructure and rolling stock prohibits these systems from including many of the attributes of a well-designed BRT.

CATEGORY	MAX SCORE		MAX SCORE
BRT BASICS		STATION DESIGN AND STATION-BUS INTERFACE	
Busway alignment	7	Distance between stations	2
Dedicated right-of-way	7	Safe and comfortable stations	3
Off-board fare collection	7	Number of doors on bus	3
Intersection treatments	6	Docking bays and sub-stops	1
Platform-level boarding	6	Sliding doors in BRT stations	1
SERVICE PLANNING		QUALITY OF SERVICE AND PASSENGER-INFORMATION SYSTEMS	
Multiple routes	4	Branding	3
Peak frequency	3	Passenger information	2
Off-peak frequency	2		
Express, limited, and local services	3	INTEGRATION AND ACCESS	
Control center	3	Universal access	3
Located in top-ten corridors	2	Integration with other public transport	3
Hours of operations	2	Pedestrian access	3
Demand profile	3	Secure bicycle parking	2
Multi-corridor network	2	Bicycle lanes	2
INFRASTRUCTURE		Bicycle-sharing integration	1
Passing lanes at stations	4		
Minimizing bus emissions	3	TOTAL	100
Stations set back from intersections	3	BRT BASICS (Minimum Needed: 18)	33
Center stations	2		
Pavement quality	2		

The BRT Standard 2013 scorecard includes six categories of BRT system design with a maximum score of 100.

ITDP¹⁶

Table 3. BRT, LRT, Streetcar and Bus scores per *The BRT Standard 2013*.

CORRIDOR		SCORE
 Guangzhou, China, GBRT		
 Curitiba, Brazil, Linha Verde		
 Curitiba, Brazil, RIT corridors		
 Cleveland HealthLine		
 Mexico City, Mexico, Insurgentes		
 Johannesburg, South Africa, Rea Vaya		
 Portland MAX Blue Line		
 Budapest, Hungary, Grand Boulevard		
 Ahmedabad, India, Janmarg		
 Ottawa Transitway		
 Pittsburgh Martin Luther King, Jr. East Busway		
 Las Vegas Strip & Downtown Express (SDX)		
 Pittsburgh "The T"		
 Denver Central Corridor		
 Phoenix Metro		
 Denver Southwest Corridor		
 Ottawa O-Train		
 Charlotte Lynx		
 Los Angeles Orange Line		
 Eugene Emerald Express Green Line (EmX)		
 Pittsburgh West Busway		Basic BRT
 Pittsburgh South Busway		Basic BRT
 Boston Waterfront Silver Line		Below Basic
 Las Vegas Metropolitan Area Express (MAX)		Below Basic
 Boston Washington Street Silver Line		Below Basic
 Kansas City Main Street Metro Area Express (MAX)		Below Basic
 Seattle South Lake Union (SLU) Streetcar		Below Basic
 Portland Streetcar		Below Basic

 Bus Rapid Transit
  Bus
  Streetcar
  Light Rail Transit
  BRT Standard Gold
  BRT Standard Silver
  BRT Standard Bronze

With the exception of Cleveland's HealthLine BRT, BRTs in the US and in Canada score bronze or below.¹⁷ Internationally, there are many silver-standard BRTs and several gold-standard BRTs. To date, gold-standard BRT corridors have been developed in Curitiba, Rio de Janeiro, Bogotá, Guangzhou, and Lima, Peru. High-quality LRTs have been developed in many cities in Europe, including in Budapest, where a silver-standard LRT has multiple routes, high frequency, priority at most intersections, platform-level boarding, and a fully dedicated running way.



Cleveland's silver-standard HealthLine BRT has median-aligned lanes and a fully dedicated busway.

ITDP



Phoenix Metro LRT scores as bronze but doesn't have multiple routes or the ability to run multiple services.

FLICKR BY SEAN MARSHALL



Las Vegas, Nevada's Strip & Downtown Express, with median-alignment, dedicated lanes and proof-of-payment fare collection scores as bronze on *The BRT Standard*.

ITDP



Rio de Janeiro, Brazil's gold-standard TransOeste is the first high-quality BRT built in Brazil outside of Curitiba.

ITDP

In the past decade there has been a resurgence of streetcar systems as a transportation option in many cities. Their low construction cost and ease of integration into urban environments is appealing to many cities. Yet streetcars are simply lower-quality versions of light rail and receive lower scores on *The BRT Standard*. Generally, streetcar systems run in the street at grade on embedded rails, often in mixed traffic; they stop frequently and operate at average speeds of less than 12 miles per hour.¹⁸ Many people note that streetcars are for local, primarily downtown trips,¹⁹ whereas light rail is for regional trips.²⁰ But even downtown trips are better served by a mode with more of the most important elements of high-quality transit, such as fully dedicated lanes, at-level boarding, and the flexibility to leave downtown. Scores for streetcars on *The BRT Standard* generally fall far below the minimum threshold for bronze. These low scores translate to slower speeds, longer waiting times, less reliability, inferior stations, and a forced transfer to travel anywhere beyond downtown.

Yet significant economic development in several cities has recently been attributed to investment in streetcars, with the best-known examples being in Portland's Pearl District and Seattle's South Lake Union neighborhood.



Portland's streetcar has been a part of the revitalization of the Pearl District.
PORTLAND STREETCAR, INC.

CHAPTER 2

Preexisting Factors Supporting TOD

Many factors that are unrelated to the quality or type of transit investment contribute to the likelihood of successful TOD. Such factors can be divided into two categories:

- 1) Preexisting attributes of a city or corridor that support TOD
- 2) Government interventions to stimulate development

By categorizing in this way we can both control for factors unrelated to transit mode and quality, and provide additional guidance to cities on the circumstances under which development is more likely to occur.

This chapter describes those preexisting attributes that make it more or less likely that a corridor will develop. Chapter 3 discusses government interventions that were used in many of the cities to successfully stimulate TOD, particularly in the places where preexisting conditions were not fully supportive of development.

It is difficult to identify a direct correlation between preexisting corridor attributes and development impacts without also looking at the degree to which the government intervened to prepare the corridor for development. A parcel of land that is not ripe for development based on the attributes described below can still become more market-ready if the government intervenes. Thus, this chapter should be seen as a first step to determining any preexisting potential for a corridor to develop while Chapter 3 discusses those actions a government can take to stimulate development. Both elements are critical to understanding when a corridor is prepared for development and how a transit investment can help.



Seattle's South Lake Union Streetcar runs through a formerly under-utilized district.
ITDP

Table 4. Total TOD investment of corridors studied

CORRIDOR		TOTAL TOD INVESTMENT (IN MILLIONS)
LRT	Portland MAX Blue Line	\$6,600
BRT	Cleveland HealthLine	\$5,800
BUS	Kansas City Main Street Metro Area Express (MAX)	\$5,200
SC	Portland Streetcar	\$4,500
SC	Seattle South Lake Union (SLU) Streetcar	\$3,000
LRT	Phoenix Metro	\$2,821
LRT	Denver Central Corridor	\$2,550
BRT	Las Vegas Strip & Downtown Express (SDX)	\$2,000
BUS	Boston Waterfront Silver Line	\$1,000
BRT	Ottawa Transitway	\$1,000
BRT	Pittsburgh Martin Luther King, Jr. East Busway	\$903
LRT	Charlotte Lynx	\$810
BUS	Boston Washington Street Silver Line	\$650
BRT	Los Angeles Orange Line	\$300
LRT	Denver Southwest Corridor	\$160
BRT	Eugene Emerald Express Green Line (EmX)	\$100
BUS	Las Vegas Metropolitan Area Express (MAX)	nominal
LRT	Ottawa O-Train	nominal
LRT	Pittsburgh "The T"	nominal
BRT	Pittsburgh West Busway	nominal
BRT	Pittsburgh South Busway	nominal

BRT Bus Rapid Transit BUS Bus SC Streetcar LRT Light Rail Transit

Table 4 lists each corridor we studied and the corresponding total dollars of private TOD investment that resulted.

Some transit corridors (Portland MAX Blue Line LRT, Cleveland HealthLine BRT) yielded significant investment while others (Las Vegas MAX, Ottawa O-Train) yielded little or none. The research showed that one of the most important preexisting factors in each of those cities and corridors were regional market strength and the quality of the land through which the corridor runs. If either of these factors is strong, TOD impacts could be significant if accompanied by government support. When weak, however, these factors do not necessarily indicate that development will not happen. Instead, a weak regional market or a weak (Limited) land market means that a higher level of government intervention is needed to stimulate development, and the results are likely to be more modest.

This research also showed that the development potential of the land served by the transit investment, if accompanied by government support for TOD, was by far the most important factor in predicting whether development was likely to occur adjacent to a new transit system investment (see Chapter 4).

Regional Market Strength

In examining preexisting corridor attributes, we began by looking at the overall market strength of the region in which the transit line was built. This allowed us to determine whether there was a correlation between successful TOD and robust regional real estate markets. However, given the data available, we did not observe a significant correlation.

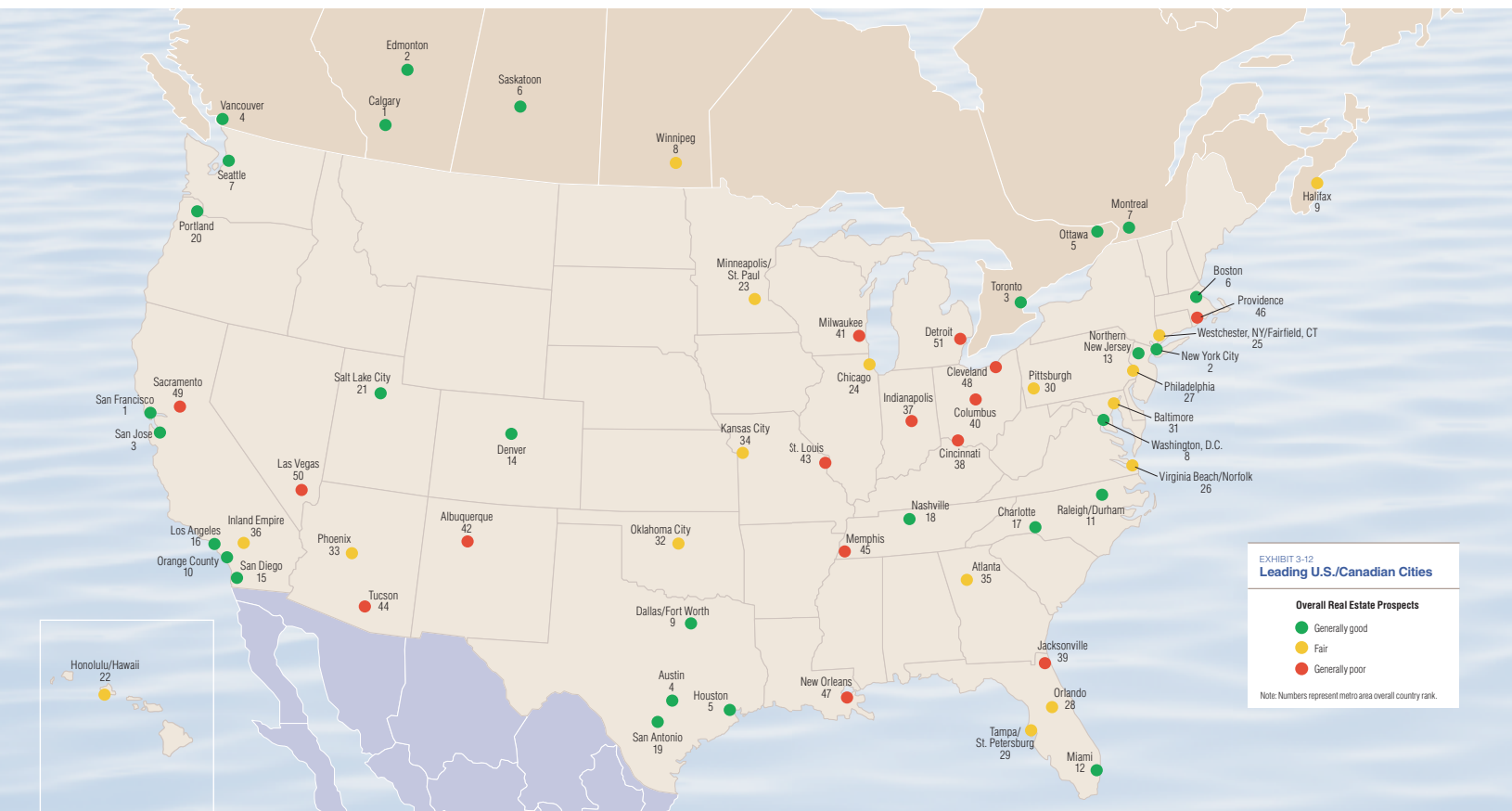
The overall development that is likely to occur in a city or region over a period of time is reasonably predictable, as are the conditions under which developers will invest to increase the building stock. However, the specifics of the land market served by the transit line and the ability of the government to channel whatever investment is taking place into TOD locations matters a lot more than overall real estate market strength.

Each year, PricewaterhouseCoopers provides an index of the overall growth potential in various cities in its annual report, *Emerging Trends in Real Estate*.²¹ This report gives an initial indication of how much growth to expect in many cities.

Table 5 presents TOD investment figures for the most successful transit corridor in each city we studied, together with an overall assessment of the regional real estate market strength in the city. Some cities with poor regional land markets, like Cleveland, had very successful TOD impacts, while other cities with strong regional markets had far less impressive TOD impacts. The overall regional real estate market strength, however, does give some indication of the breadth of TOD investments that can be absorbed. In a weak market, it is likely that only one relatively short corridor is likely to be able to leverage TOD investment. In a stronger market, perhaps two or three corridors might leverage TOD investment, but even then the government needs to make the necessary effort to channel investment to these corridors.

Table 5. TOD Impacts in the most successful corridor in each city, in relation to regional real estate market strength.

CITY	REGIONAL REAL ESTATE MARKET STRENGTH	TOTAL TOD INVESTMENT (IN MOST SUCCESSFUL TRANSIT CORRIDOR)
Portland	Generally Good	\$6.6 Billion (MAX Blue Line LRT)
Cleveland	Generally Poor	\$5.8 billion (HealthLine BRT)
Kansas City	Fair	\$5.2 billion (Main Street MAX bus)
Seattle	Generally Good	\$3 billion (SLU Streetcar)
Phoenix	Fair	\$2.821 billion (Metro LRT)
Denver	Generally Good	\$2.55 billion (Central Corridor LRT)
Las Vegas	Generally Poor	\$2 billion (SDX BRT)
Boston	Generally Good	\$1 billion (Waterfront Silver Line bus)
Ottawa	Generally Good	\$1 billion (Transitway BRT)
Pittsburgh	Fair	\$903 million (MLK, Jr. East Busway BRT)
Charlotte	Generally Good	\$810 million (Lynx LRT)
Los Angeles	Generally Good	\$300 million (Orange Line BRT)



**The Pricewaterhouse-Coopers
2013 map of real estate potential
shows trends across the US.**
PRICEWATERHOUSECOOPERS

Market Strength of Land Served by New Surface Mass Transit

At the local level, some land markets are stronger than others. In cities with high growth potential, focusing development around a few transit stations can help direct the overall growth to a few compact, urban, transit-oriented centers. In cities with low growth potential, focusing development efforts around transit stations in the parts of the city anchored by stronger land markets may offer the best hope for stimulating new growth in the city.

According to the Center for Transit Oriented Development (CTOD):

The strength of the real estate market in a particular transit community is a significant determinant of the type of investment that might be made... It is difficult... to catalyze private development in an area with limited or no existing market activity. Conversely, an area with strong market activity may not need the same level of intervention to attract development or encourage desired building types. Emerging areas that have some market strength, but few successful urban, mixed-use buildings, on the other hand, may be ideal candidates for [government intervention]. Here, program intervention can help to push a ripening market and escalate development intensity and quality since higher density mixed-use building types cost significantly more to build on a per-square-foot basis.²²

Developers are more likely to take the risk of developing a site if the potential income generated by property leases after development is significantly higher than the income received under current land use.²³ The greater the uncertainty about the ability to rent the properties, the greater this potential income gap needs to be in order to induce development. Thus, land can be classified into a typology that indicates its likelihood of developing based loosely on this economic principle.



The CTOD developed a real estate market strength typology for Portland's Metro.²⁴ This typology classifies the development potential of an existing area of land (i.e., "real estate market strength"), which indicates the corresponding level of government intervention needed to aid development there (in this case, in the form of a TOD grants program). We adopted this typology, with slight modifications, and applied it to our study corridors based on the market strength of the majority of the land through which the transit corridor passes. Specific data on market strength is difficult to collect, so we categorized development potential in the following ways:

1. Limited

Land that is not easily developed, either because it is already built up, is owned by institutions, adjacent to a highway or active rail line, topographically difficult to develop, divided into small parcels with confusing title deeds, extremely contaminated, or blighted with no clear economic anchor nearby. Certain government interventions could stimulate development but would likely be extremely resource intensive.

2. Emerging

Land is available for redevelopment. It is perhaps currently blighted but is adjacent to an economic anchor and hence likely to redevelop with some government intervention. The land may not develop without intervention on its own in the near-term, but some government support could have a transformative effect. Interventions can stimulate significant development on this land.

3. Strong

Land markets that tend to be in or adjacent to downtowns, where land is available for development, and where other natural or historical features such as waterfronts or historical buildings make the land attractive to developers. Certain government interventions could help further spur development. Here the planning authorities will also have more leverage to improve the walkability and other transit-oriented qualities of the development. Fewer tax incentives, infrastructure financing, or other forms of financial support will be necessary to stimulate development per se, since investment interest is already high. Under this market type, regulatory authorities can also use strong developer interest to leverage amenities, such as affordable housing, bicycle lanes, bike sharing, transit stations, and other public amenities in exchange for zoning bonuses.

In the revitalization of Pittsburgh's East Liberty neighborhood, the market strength of the land was enhanced by the MLK Jr. East Busway BRT as well as the surrounding neighborhoods.

ELDI

While this typology includes three distinct categories, it is, in practice, a spectrum of market strength. The weaker the market the more government intervention is necessary to facilitate development; the stronger the market the less government intervention is needed—a small extra push may be enough—but the more leverage the government may have over developers to deliver on other social objectives.

Market strength along corridors in our study was estimated based on the city's overall market strength and by an observational assessment of land along the corridor. We applied this typology to entire corridors, though it was developed for specific TOD sites. Naturally, any corridor is likely to contain a mixture of land types, but using this typology we broadly classified the corridors we studied based on the predominant type of land through which each transit line passes.

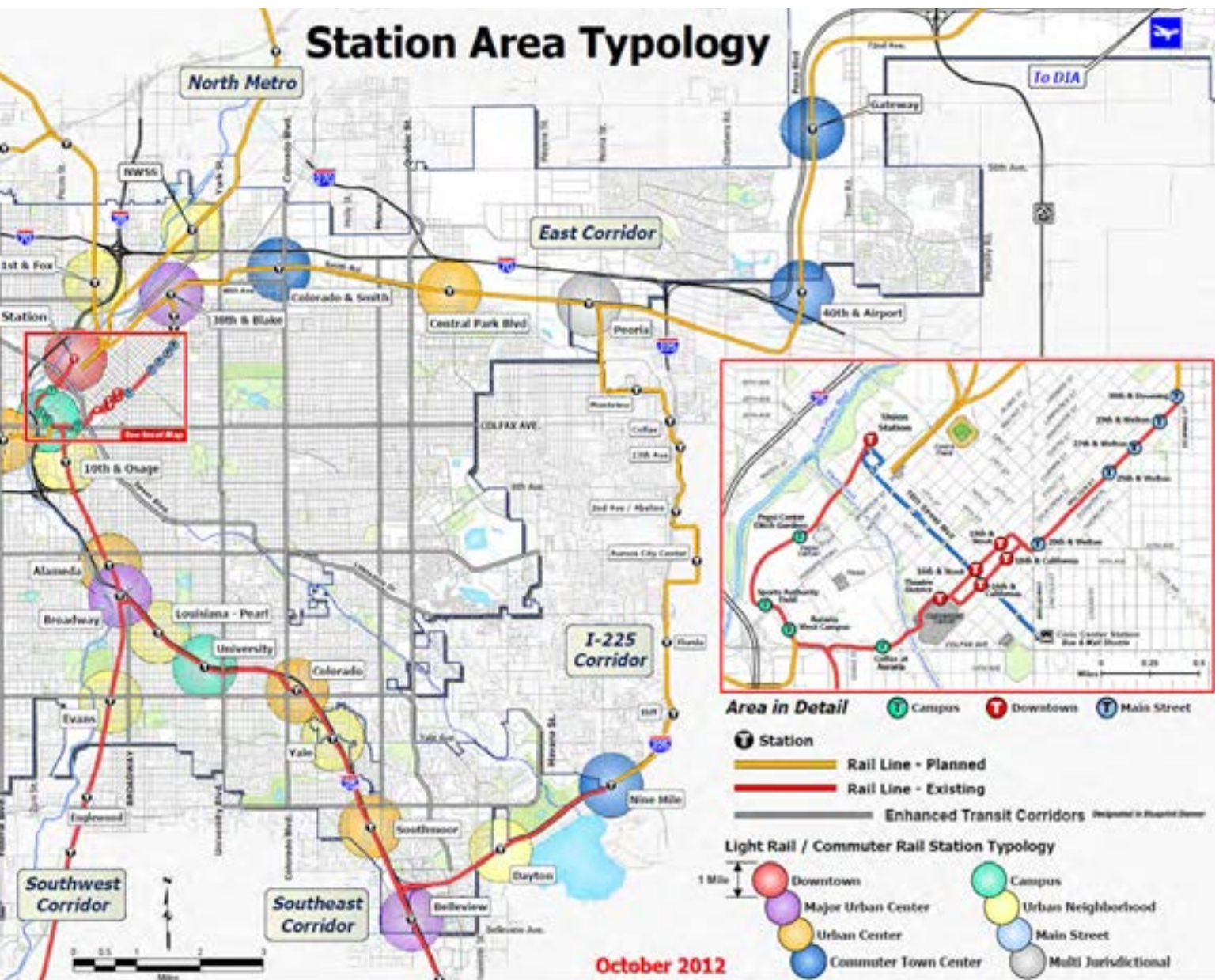
In addition to the inherent market strength of the land, several other factors can significantly affect a site's development potential. Land assembly can be a very expensive and time-consuming process. Regardless of the type of land, assembling a plot of land large enough to attract a major developer can be more expensive and difficult in some areas than in others. However, if the municipal government already owns large parcels of land in the area, the cost of land assembly will be lower and could move the land into the Emerging or Strong category. Similarly, if the land is currently developed with low-value properties, like warehouses or surface parking lots, and the difference between the potential value and the current value of rental incomes is high, it could be easier and less costly to acquire the land, which would also potentially move the land from the Limited to the Emerging or Strong category.

Along most of the Pittsburgh MLK Jr. East Busway BRT, one of the primary reasons development has been so difficult is that much of the land is divided into small parcels. The main exception is the urban subcenter of East Liberty, which is now redeveloping. Here, a concentration of municipal land (30% of the land around the East Liberty BRT station), surface parking lots, and deteriorated affordable-housing estates made it relatively easy to assemble a critical mass of large parcels of land for redevelopment. The site is also adjacent to Shadyside and Ellsworth, two higher-income communities that are able to attract commercial development.

The owner of the land also matters. Some developers are themselves risk-averse, or are in fact families or groups of individuals for whom collective decision-making is difficult. In such cases the owners may be reluctant to redevelop a property given the uncertainty of a return-on-investment or because they are unable to come to a group decision. An example of the latter is in Seattle, near the South Lake Union (SLU) Streetcar corridor. While the corridor itself is strong, parking lots that are relatively valuable due to their proximity to South Lake Union and downtown Seattle sit on family-owned land that has been passed down through several generations. With each generation came more family members, thus more owners. The cash yield from these parking lots is low but reliable, and the trouble of convening all owners to consider selling the lots for potentially higher yet riskier returns means that the parking lots will not develop until all of the owners reach agreement. If many of the sites adjacent to a transit corridor are of this nature, the local land market will generally be weak.

Ideally, to assess development sites, each station area in the system should be ranked according to its inherent market potential, and then the overall corridor potential should be classified based on the percentage of the land in each category. However, such a systematic analysis was beyond the scope of this paper. Rather, we determined the development potential of the majority of the land served by the new surface mass transit investment based on site visits and interviews.





Denver created a station area typology to determine where to focus their TOD efforts.

RTD

Table 6. Preexisting corridor market strength for each of the systems we studied.

CORRIDOR	CORRIDOR REAL ESTATE MARKET STRENGTH
 Kansas City Main Street Metro Area Express (MAX)	Strong
 Denver Central Corridor	Strong
 Las Vegas Strip & Downtown Express (SDX)	Strong
 Boston Waterfront Silver Line	Strong
 Portland Streetcar	Strong
 Seattle South Lake Union (SLU) Streetcar	Strong
 Eugene Emerald Express Green Line (EmX)	Emerging
 Los Angeles Orange Line	Emerging
 Boston Washington Street Silver Line	Emerging
 Charlotte Lynx	Emerging
 Cleveland HealthLine	Emerging
 Ottawa Transitway	Emerging
 Phoenix Metro	Emerging
 Pittsburgh Martin Luther King, Jr. East Busway	Emerging
 Portland MAX Blue Line	Emerging
 Denver Southwest Corridor	Limited
 Las Vegas Metropolitan Area Express (MAX)	Limited
 Ottawa O-Train	Limited
 Pittsburgh "The T"	Limited
 Pittsburgh South Busway	Limited
 Pittsburgh West Busway	Limited

 Bus Rapid Transit  Bus  Streetcar  Light Rail Transit

Land with Limited Development Potential

Even a high-quality, gold-standard BRT, LRT, or streetcar might result in minimal TOD impact if the transit system passes predominantly through land with poor development potential. Often the reason a system passes through undevelopable land is that a former freight railway right-of-way or a median along a limited-access freeway was available and selected for use as the transit corridor. Sometimes, undevelopable land is in some form of public use like a park, a school, a garbage dump, or an electric power station. Some of it may not be developable because it lies within a flood plain, or on a slope too steep to develop, or in an area prone to some other form of natural disaster. It may also be former

industrial land with a level of environmental contamination so high that it is unlikely that either the government or a developer would invest the funds required to clean it up.

Sometimes land is hard to develop for other reasons. If land is carved up into small plots, the title deeds are ambiguous and/or tied up in litigation, and there are many existing land-owners, it could be expensive and cumbersome to assemble enough land to attract the sort of anchor tenant that would kick-start a process of urban revitalization. Problems with title deeds are also fairly common on old industrial properties such as those along former freight rail lines.



Denver's Southwest Corridor operates along industrial land and rail right-of-way, which contributes to its limited development potential.

FLICKR BY JEFFREY BEALL

The Pittsburgh MLK Jr. East Busway BRT runs mainly on a former freight rail corridor. The buses continue into downtown but are not on dedicated right-of-way for the critical last mile of the trip. Much of the land on either side of the BRT trunk corridor is either already built up, alongside hilly undevelopable land, or on old industrial land that the city has never made much of an effort to redevelop. Some of the old industrial land is brownfield that requires environmental cleanup.

The Denver SouthWest Corridor LRT, the Ottawa O-Train, and the Pittsburgh "T" LRT are similarly situated along rail rights-of-way with little adjacent developable land. While Denver's SouthWest Corridor runs alongside miles of industrial land, Ottawa's O-Train runs past a local university and a major highway, and Pittsburgh's "T" LRT passes through hilly, undevelopable land.

The Las Vegas MAX does not run along a former rail right-of-way but passes through land of extremely low value that would require significant government effort to be developed.

The existing character of the land is dominated by big-box retail and strip mall development, as well as utility plants, including a large water treatment facility. Many of the people who live or work along the corridor are low-income, and crime is a problem. Las Vegas as a region had limited real estate development potential after the 2009 economic downturn, and most of the new development is occurring downtown. Therefore, the MAX corridor has failed to leverage any land development.



The proximity of Boston's Waterfront to its central business district has strengthened the land's development potential and made it an attractive area for tenants that are either priced out of the downtown or are unable to find the space they need.

ITDP

Land with Strong Development Potential

A mass transit corridor is more likely to have a significant development impact — without additional government interventions — if it passes through a lot of land that is desirable for redevelopment as opposed to through a small amount of such highly desirable land.

We classified the land surrounding the Seattle and Portland streetcars, Kansas City Main Street Metro Area Express (MAX), Boston Waterfront Silver Line, Denver Central Corridor LRT, and Las Vegas Strip & Downtown Express (SDX) BRT corridors as Strong. This classification was based on the fact that these systems either were built almost entirely within a revitalizing downtown area, or they connect a revitalizing downtown area with a desirable adjacent property. The Portland Streetcar operates almost entirely within the highly desirable Pearl District, which is redeveloping for a variety of reasons. The Seattle SLU Streetcar connects downtown Seattle to South Lake Union, a waterfront

neighborhood adjacent to downtown that is ripe for redevelopment. Similarly the Boston Waterfront Silver Line connects downtown Boston to a highly desirable waterfront area adjacent to downtown. A majority of the Kansas City Main Street MAX runs in or directly adjacent to downtown, then continues for a short segment to southern parts of Kansas City. Denver's Central Corridor LRT runs exclusively in the downtown and periurban areas. The Las Vegas SDX also runs through downtown Las Vegas and onto the Las Vegas Strip. In each case the new transit service was helpful in unlocking development, but the land already had very strong redevelopment potential, as described later.

Certain preexisting characteristics in neighborhoods make parcels of land more interesting to developers. The more of these characteristics a parcel has, the more likely it is to develop on its own with fewer government interventions.



Bogotá's downtown was previously crime-ridden and dangerous, but the BRT, which runs directly through the historic downtown, has helped to bring activity to the area.

ITDP

Downtowns and Other Transit-Oriented Hubs

Most urban development occurs around a hub. A hub is a cluster of employment and economic activity that attracts people to the location. Downtowns are the most likely hubs, as they tend to concentrate employment; but there may be other hubs in a city, like a cluster of major universities and cultural institutions, major hospitals, or other economic subcenters.

Downtowns across the US are revitalizing. Many cities' downtowns already have the highest concentrations of jobs and sometimes also of residents. Downtowns enjoy "agglomeration economies"²⁵ where co-location with other businesses and residential areas tends to lower overall travel costs and other transaction costs. Unless blighted by crime, poor schools, or the lack of other basic services, downtowns are, once again, becoming desirable locations for investors.

Downtowns have two critical advantages when it comes to stimulating TOD investments. First, downtown sites are likely to be served by a large number of preexisting transit and other transportation corridors, making them more accessible to other neighborhoods and thus more attractive to development. Second, downtowns tend to have urban characteristics more oriented to mass transit users. Many older US city centers, particularly on the East Coast and in the Midwest, were built before the age of the automobile. As a result, the street grids, design of the buildings, and mix of land uses were all at a pedestrian scale, oriented toward use by pedestrians and public transit passengers.

Today, with the revitalization of US downtowns, mass transit that is incorporated into a city's downtown tends to have a good chance of making

a positive impact on downtown development. However, because US downtowns are generally making a comeback anyway, TOD impacts along new surface mass transit investments observed in downtown areas are somewhat difficult to attribute solely to the new mass transit line. A downtown may well have seen property values rise quickly enough to stimulate new development even in the absence of a new transit investment. On the other hand, many cities that have not yet revitalized their downtowns, and whose downtowns remain strictly commercial hubs that go dormant at 5pm, are seeing the introduction of a transit line downtown as a stimulus for new mixed-use development and a more modern downtown.

In addition to the potential for directly impacting the urban downtown, a new surface mass transit line that enters and/or passes through a city's downtown is generally more likely to have positive TOD impacts, even beyond the downtown, than one that begins and ends outside of downtown. The reason is that a large portion of residents in most US cities still work downtown, and the existence of a direct transit connection to work may make or break their choice of where to live.

A new surface mass transit investment that passes through the city's downtown, therefore, is more likely to leverage new TOD investment than a new transit investment in a system that does not go near downtown or that terminates prior to reaching downtown.

In the corridors we studied, all of the most successful transit investments from the perspective of leveraging TOD investment pass through or into the cities' downtowns. Cleveland's highly successful HealthLine BRT connects the two most important economic hubs in Cleveland: downtown, which is a major employment center, and University Circle, which includes a cluster of universities, hospitals, and cultural institutions. The Las Vegas SDX connects the Las Vegas Strip – the largest economic center in the state of Nevada – with downtown Las Vegas. Similarly, the Eugene Emerald Express Green Line (EmX) BRT connects the University of Oregon with downtown Eugene. All had positive development impacts.

Table 7. A mass transit system that runs on dedicated lanes in a city's downtown is more likely to leverage TOD.

CORRIDOR		ENTERS INTO DOWNTOWN	TOD INVESTMENT (MILLIONS)
LRT	Portland MAX Blue Line	Yes	\$6,600
BRT	Cleveland HealthLine	Yes	\$5,800
SC	Portland Streetcar	Yes	\$4,500
BUS	Kansas City Main Street Metro Area Express (MAX)	Yes	\$5,200
SC	Seattle South Lake Union (SLU) Streetcar	Yes	\$3,000
LRT	Phoenix Metro	Yes	\$2,821
LRT	Denver Central Corridor	Yes	\$2,550
BRT	Las Vegas Strip & Downtown Express (SDX)	Yes	\$2,000
BUS	Boston Waterfront Silver Line	Yes	\$1,000
BRT	Ottawa Transitway	Yes	\$1,000
BRT	Pittsburgh Martin Luther King, Jr. East Busway	No	\$903
LRT	Charlotte Lynx	Yes	\$810
BUS	Boston Washington Street Silver Line	Yes	\$650
BRT	Los Angeles Orange Line	No	\$300
LRT	Denver Southwest Corridor	Yes	\$160
BRT	Eugene Emerald Express Green Line (EmX)	Yes	\$100
BRT	Pittsburgh South Busway	No	nominal
LRT	Ottawa O-Train	No	nominal
BRT	Pittsburgh West Busway	No	nominal
LRT	Pittsburgh "The T"	Yes	nominal
BUS	Las Vegas Metropolitan Area Express (MAX)	Yes	nominal

BRT Bus Rapid Transit BUS Bus SC Streetcar LRT Light Rail Transit

By contrast, the Los Angeles Orange Line does not pass through or near downtown Los Angeles, and it had limited land development impacts. In Pittsburgh and Ottawa, the true BRT portions of the BRT systems end just short of those cities' downtowns. All of the BRT corridors in Pittsburgh merge into automobile traffic when entering downtown, while in Ottawa, the fully grade-separated BRT services enter downtown but do so in underperforming curbside bus lanes. These systems also had more limited land development impacts compared to other systems.

In terms of the LRT systems we studied, Denver's Central Corridor LRT is a combination of several LRT lines that merge as they enter downtown. As such, Denver's Central Corridor LRT corridor had a good impact on land development downtown. The Phoenix Metro LRT, the Blue Line LRT, and the Charlotte Lynx LRT also enter the downtown areas and connect to surrounding areas; they also had relatively positive land development impacts.

Seattle's SLU Streetcar, though it carries few passengers and is relatively unimportant as a transit line, connects the South Lake Union neighborhood to downtown Seattle, linking two of Seattle's strongest land markets. The Portland Streetcar connects downtown Portland to an adjacent former industrial zone that is now the hottest land market in Portland — the Pearl District.

In summary, the TOD impacts of a transit investment are determined by whether the investment directly serves downtown more so than by the type or quality of the transit investment.

Ottawa's curb-side bus lanes run through the downtown, but, due to traffic conflicts at the curb, do not provide any of the time-savings benefits of its extensive bus-only corridors.

FLICKR BY PAUL SHERWOOD





Charlotte's Lynx LRT connects Uptown, a former textile hub, with the downtown.
SOUTH END NEIGHBORHOOD ASSOCIATION



After the demolition of the Harbor Freeway, Portland's waterfront was transformed into a park.

FLICKR BY PANCHENK



Waterfronts and Historical Assets

Today, many of the strongest urban land markets are waterfronts or historical districts near central business districts or subcenters. Waterfronts are an important natural feature that may make an area more attractive to potential developers. As discussed in the 2012 report *The Life and Death of Urban Highways*,²⁶ waterfronts in cities worldwide are often former ports or industrial areas whose connection to the rest of the city was severed by the construction of massive highways in many cases. In the 1970s, as ports relocated to deeper water farther from town centers, cities began to recognize the commercial value of redeveloping these waterfronts as lively commercial centers; as a result, they have been making improvements to the zoning codes and urban infrastructure that previously had prevented development along waterfronts. Developers have come to the table and developed new vibrant waterfronts in cities from Cleveland to Vancouver to Oslo.²⁷

In the cities we surveyed, several areas are redeveloping primarily because they are located on waterfronts. The Waterfront Silver Line in Boston, with its new tunnel connecting central Boston to the waterfront, leveraged a considerable amount of TOD investment despite the fact that most of the transit line is of fairly low quality. Investment was a success mainly because the land was waterfront adjacent to the downtown, and hence ripe for redevelopment. The South Lake Union neighborhood in Seattle is also redeveloping in part because it is adjacent to newly accessible waterfront.

Historical districts and historical buildings are also assets that make a neighborhood more likely to be redeveloped. From the 1950s into the 1970s urban renewal demolished parts of historic town centers and waterfront areas, making way for shopping malls, highways, parking lots, and car-oriented “towers in the parking lot.”²⁸ Those buildings that survived, however, are today becoming valuable assets for restoration that are treasured by a rising segment of the population — those whom economist Richard Florida terms the “Creative Class.” This group, whose members generally work in cities in careers structured around innovation, represents the new direction of the US post-industrial economy.²⁹ The

group plays a large role in the trend toward the revitalization of historic town and city centers and the reuse of former industrial zones.

As a result of these trends, the renovation of historic buildings is becoming more fashionable among real estate developers and consumers. Along the successful Pittsburgh MLK Jr. East Busway BRT corridor, for example, the East Liberty Station area is redeveloping in part due to this historical legacy. East Liberty, a once vibrant neighborhood, was destroyed in the 1970s as a result of urban renewal projects that surrounded and isolated it from the neighboring communities. While its buildings generally remained intact, its population dwindled and the neighborhood became crime-ridden. Today new tenants are taking advantage of the wide availability of the area’s beautiful historic buildings, preserving them and converting them into vibrant spaces.³⁰ Among the developments, the trendy Ace Hotel chain is set to take over a nineteenth-century YMCA building; and Google, along with several other technology firms, has moved into a renovated Nabisco factory.

In Kansas City, an important landmark in the jazz movement, many historic buildings in the 18th & Vine Jazz District have recently been renovated. After years of urban flight, 18th & Vine was left dilapidated and vacant. The city government, the Kansas City Downtown Council, and the Jazz District Redevelopment Corporation (the local community development corporation, or CDC) have all helped market and attract developers to these historic buildings. Redevelopment includes the American Jazz Museum, the Negro Leagues Baseball Museum, several historic structures, new retail construction, and more than 800 apartment units.

The existence of historical and cultural assets along the Cleveland HealthLine BRT corridor, formerly called Millionaire's Row, also helped to strengthen the preexisting land market in that city and classify Euclid Avenue as an Emerging market in our study (see "Preexisting corridor market strength for each of the systems we studied," p. 42). Redevelopment efforts along the Euclid Avenue corridor began in 1994, before the BRT and were aided by significant historic preservation funds. Although the corridor had already attracted incremental redevelopment investments before the BRT existed, these assets, in combination with the BRT, were critical to the TOD impacts along Cleveland's HealthLine.

In some cases old industrial land has been redeveloped successfully. Some historical industrial buildings and warehouses make for an interesting new urban landscape. An old industrial site can become a valuable asset if it is located in a sufficiently strong land market, such as near a downtown or adjacent to a waterfront or other popular area.

The neighborhood of MidTown in Cleveland lies along Euclid Avenue between downtown and University Circle. Formerly, it was home to light industrial use; in recent years, much of it was abandoned. Now, however, Midtown is being redeveloped. While many of the old industrial buildings and warehouses were cleared, others — like the Baker Electric Building — have been converted into offices for high-tech companies, giving the neighborhood a unique character.



19th Century YMCA in Pittsburgh along the MLK Jr. East Busway BRT in the process of conversion to a trendy hotel.
FLICKR BY RWOAN



\$81 million of redevelopment has helped Kansas City's historic Jazz district revitalize in recent years.
FLICKR BY CHRIS M70

Land with Emerging Development Potential

Land in the Emerging category is the most interesting from the perspective of TOD impacts and public policy. If land has Limited development potential, it is unlikely to develop regardless of the quality of the surface mass transit investment. If the land has Strong development potential, it is likely to develop with relatively modest public involvement regardless of the quality of the surface mass transit investment. If, on the other hand, the land could develop but would require various forms of government intervention to stimulate the market, a surface mass transit investment — and the quality of that investment — could make a significant difference in the amount of TOD investment leveraged.

The land surrounding the Cleveland HealthLine BRT, Eugene EmX BRT, Los Angeles Orange Line BRT, Boston Washington Street Silver Line, Ottawa Transitway BRT, Phoenix Metro LRT, Blue Line LRT, and Charlotte Lynx LRT was classified as Emerging. These transit systems, with the exception of the Los Angeles Orange Line, all enter downtown areas that are being revitalized and have some historical and cultural assets, and connect them to surrounding areas with land of varying degrees of emerging development potential.

Cleveland's HealthLine BRT corridor is in a city where the regional property market is extremely weak. Cleveland is a struggling industrial city that experienced a downturn during the 2009 economic crisis. However, the development potential of the Euclid Avenue neighborhood was significantly better than in the rest of the city; and it was possibly the only corridor that could help bring new development to Cleveland and begin to strengthen the overall property market. Euclid Avenue was already the bus corridor with the highest demand in the city, and it is built right into the downtown area. The corridor had a concentration of historical properties as well as many large abandoned plots ripe for redevelopment. Chapter 6 includes a detailed case study on how Cleveland invested nearly all of its development resources on redeveloping the Euclid corridor to overcome a weak regional market and an emerging corridor-specific land market.

The beautification of Las Vegas' busway has contributed to the resurgence of the historic downtown.

ANNIE WEINSTOCK, ITDP



CHAPTER 3

Government Interventions

The preexisting market conditions along the studied corridors, and the effects of those market conditions on TOD were discussed in the previous chapter.

A variety of government interventions can help promote development on a parcel of land adjacent to a surface mass transit station. The stronger the institutions working together to broker these interventions, the more likely they are to succeed. The more the government and affiliated development organizations show that they have a coherent plan and are following through with it, the greater the degree of confidence they will instill in potential investors. A strong redevelopment authority, for example, may see a TOD project through from start to finish by crafting a neighborhood brand and bringing the government together with potential developers. A strong community development corporation (CDC) might be able to mobilize an otherwise reluctant government to act on unrealized neighborhood development potential, or help the government raise funds, market the location, and so on.

These interventions could involve regulation, such as changing zoning and parking laws; government investments in new infrastructure, such as water, sewer, power, or telecommunications; low-interest forgivable government loans for developers, which reduce financial risk; tax abatements for new developers; or the government's powers of eminent domain or tax repossession for land assembly. A well-crafted government intervention consisting of extensive government investment, loans, and tax incentives, coupled with an assertive use of government powers, has a greater likelihood of achieving a good TOD outcome. Government's role may also involve marketing the site to potential developers and addressing developer concerns about government bureaucracy, which may be acute in urban areas.

To determine the potential impact that the quality of a surface mass transit investment may have on TOD results, we classified the degree to which the government intervened to make a corridor a success as follows:

1. Weak

The government did almost nothing to promote TOD.

2. Moderate

Some effort was made by the government to promote development at a few sites through rezoning, investing into related infrastructure, some financial incentives, environmental clean-up, land assembly, or marketing activities.

3. Strong

The government used its powers to promote TOD along significant parts of the transit corridor. This includes most of the following: rezoning, creating a comprehensive plan with a specific focus on the corridor, pro-active outreach to developers, environmental clean-up, land assembly, extensive marketing of the corridor, and a range of financial incentives.

Table 8, below, provides an overview of government intervention in the cities we analyzed. This table shows a nearly direct correlation between total dollars of TOD investment and government TOD support. Even in Strong land markets, government support was necessary to encourage development. The sections that follow describe a range of government interventions in one or more of our study corridors.

Table 8. Government interventions are essential to leveraging land development in a range of citywide land markets.

	CORRIDOR	GOVERNMENT TOD SUPPORT	TOD INVESTMENT (MILLIONS)
LRT	Portland MAX Blue Line	Strong	\$6,600
BRT	Cleveland HealthLine	Strong	\$5,800
BUS	Kansas City Main Street Metro Area Express (MAX)	Strong	\$5,200
SC	Portland Streetcar	Strong	\$4,500
SC	Seattle South Lake Union (SLU) Streetcar	Strong	\$3,000
LRT	Phoenix Metro	Moderate	\$2,821
LRT	Denver Central Corridor	Moderate	\$2,550
BRT	Las Vegas Strip & Downtown Express (SDX)	Moderate	\$2,000
BUS	Boston Waterfront Silver Line	Moderate	\$1,000
BRT	Ottawa Transitway	Moderate	\$1,000
BRT	Pittsburgh Martin Luther King, Jr. East Busway	Moderate	\$903
LRT	Charlotte Lynx	Moderate	\$810
BUS	Boston Washington Street Silver Line	Moderate	\$650
BRT	Los Angeles Orange Line	Moderate	\$300
LRT	Denver Southwest Corridor	Moderate	\$160
BRT	Eugene Emerald Express Green Line (EmX)	Moderate	\$100
BUS	Las Vegas Metropolitan Area Express (MAX)	Moderate	nominal
LRT	Ottawa O-Train	Weak	nominal
LRT	Pittsburgh "The T"	Weak	nominal
BRT	Pittsburgh South Busway	Weak	nominal
BRT	Pittsburgh West Busway	Weak	nominal

BRT Bus Rapid Transit BUS Bus SC Streetcar LRT Light Rail Transit

Agencies, Authorities, and Other Institutions

A city's ability to make regulatory changes and stimulate TOD depends in large measure on the effectiveness of existing public and private institutions. For example, regional planning agencies help set long-term development goals for an entire region; these may include TODs in specific locations. The city planning and transportation staffs make critical decisions on land-use regulations, transportation policy, and project design. Redevelopment authorities, economic development departments, and community development corporations can help attract developers, assemble land, and secure financing. Local foundations often provide grants and can convene both public and private institutions to stimulate development and affordable housing efforts in certain TOD areas. The specific administrative structures of these agencies often vary, but the objectives are similar. Well-functioning agencies that work together toward common goals increase the likelihood that development will occur at specific desired sites or along a specific transit corridor.



In addition to the transit investment, Cleveland invested in its streetscape with new benches, planters and artisan-crafted garbage cans.

ITDP.

Regional Planning Agencies

Regional bodies are particularly important where metropolitan regions are broken up into multiple independent municipalities, but in general they play a valuable role in most metropolitan areas. Regional planning agencies, including councils of governments (COGs) and metropolitan planning organizations (MPOs), have played an important role in setting the land use agenda across multiple municipalities. Many COGs grew out of private regional planning efforts initiated in the 1920s; many others were the result of federal legislation in the 1970s that provided funding to encourage regional-level planning and coordination. COGs tend to be nonprofit private associations but composed of representatives from municipal or county governments. MPOs were established to comply with the provisions of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, which made the receipt of federal transportation funds from the Highway Trust Fund contingent upon the creation of such bodies and the completion of regional transportation plans. TOD-supportive plans and programs at the regional level have helped guide some municipal-level efforts.

These regional bodies vary greatly in their level of influence. If they act as regional governmental bodies as well as the regional MPO, as is the case in Portland, Las Vegas, and Denver, they can be relatively powerful and can play an important role in promoting TOD. They can both fund TOD efforts directly and direct the use of US federal transportation funds toward TOD projects. In other cases, as in the New York Tri-State area, the regional MPO is weak, and most critical decisions are made by state- or municipal-level agencies and public authorities.

The state of Oregon established Metro, a regional governmental body with unusually broad powers. It is the only regional governing body whose Council of Governors is elected directly. It operates regional enterprises such as solid-waste management and is funded through earmarked property tax revenues and user fees. Metro oversees long-range regional planning and is charged with managing the region's urban growth boundary and developing growth management and land use policies, creating an overall transportation plan, and allocating

federal funds to regional-level projects. Its dual role as the region's MPO also allows it to approve federal transportation fund expenditures. This structure has been pivotal to the implementation of a coordinated land use and transportation plan. Metro also works with the City of Portland to set LRT system expansion policy, which includes a set of targets designed to measure corridor readiness for mass transit investment prior to expansion.

The Denver region has also established a robust regional governing body: Denver Regional Council of Governments (DRCOG). This body coordinates regional planning efforts across 56 municipalities and helps to implement Denver's metropolitan vision and TOD strategies by funding planning activities. Similar to Metro, DRCOG is also the Denver region's MPO. It plans, programs, and coordinates federal transportation funds as well as distributes federal municipal planning and implementation grants to municipalities, counties, state agencies, housing authorities, nonprofits, corporate interests, and philanthropic and academic organizations. The TOD agenda in Eugene, Oregon, is similarly set and overseen by its regional body — the Lane Council of Governments (LCOG). LCOG created the comprehensive plan for Eugene and Springfield as well as the Eugene-Springfield transportation system plan.

Redevelopment Authorities

Many of the cities surveyed in this report, including Pittsburgh, Boston, Eugene, Denver, Portland, and Los Angeles, have city-level redevelopment authorities that help with various aspects of land development. Most of them are public authorities. A redevelopment authority is typically a government-controlled yet partially independent corporate body whose task is to revitalize deteriorated areas. It is typically governed by a board of directors appointed by the mayor and/or the governor, which holds it partially accountable to the public. These authorities are generally exempt from many civil service labor and procurement rules, which gives them more autonomy in the hiring and firing of staff and contractors. Most are financed through a combination of public revenue, such as earmarked taxes and proceeds from quasi-corporate activities such as the assembly and sale of land. Many also raise funds by selling bonds backed by these primary sources of revenue.

Many states also have state-level and regional redevelopment authorities, which can complement city-level agencies and operate in their absence. The Ohio Development Services Agency manages Community Development Block Grants, technical assistance, and other financial instruments that were critical to marshaling the resources necessary to make redevelopment possible along the Cleveland HealthLine BRT.³¹

Generally, redevelopment authorities participate in some or all of the following activities:³²

1. Establishing a vision for a site:

Many redevelopment authorities issue planning grants, since in Emerging land markets a strong vision is needed to sell new developments to both developers and the developers' target audiences (buyers/tenants). The Portland Development Commission (PDC) provides grants for pre-development activities such as architectural planning studies, market assessments, and environmental studies, which can further strengthen support for development projects.

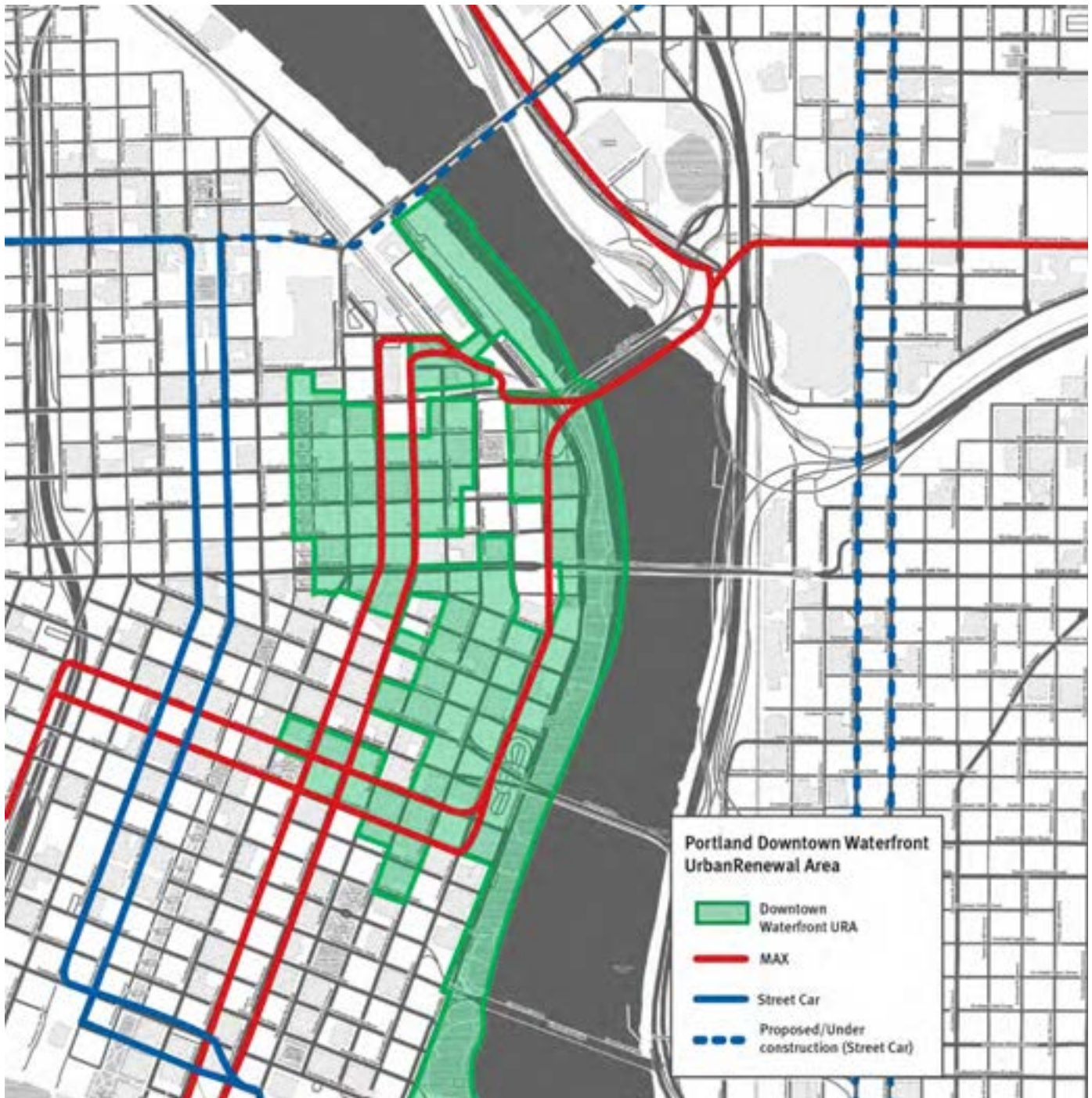
2. Assembling land, including taking real estate through eminent domain:

Many urban development projects require a developer in order to assemble a number of contiguous small land parcels, each with a different owner, into a larger parcel. A redevelopment authority might help broker such an assembly of land. The power of eminent domain varies significantly from state to state. Because these powers were sometimes abused in urban renewal efforts of the 1960s and 1970s, many states curtailed the powers of redevelopment authorities by narrowing the scope of what is considered a public purpose. Redevelopment authorities tend to focus on sites that used to be considered "blighted" but that are now called "entitlement" areas. Often, these areas are Emerging land markets, because they generally require a greater degree of public intervention to make private investment in the location viable. Whenever possible, municipalities prefer to avoid the use of eminent domain, instead encouraging the willful relocation of businesses and residents in which both parties agree on a fair market price for the relocation.

Former manufacturing buildings, like the Todd Bolender Center for Creativity and Dance, have been great opportunities for redevelopment along the MAX in Kansas City's downtown.

DANCEHUNTER, LISA LIPOVAC=





Portland Development Commission provides funds for planning studies and grants in designated areas, like the above Downtown Waterfront.

PORTLAND DEVELOPMENT
COMMISSION

3. Cleaning up environmentally contaminated land and demolishing/rehabilitating substandard structures:

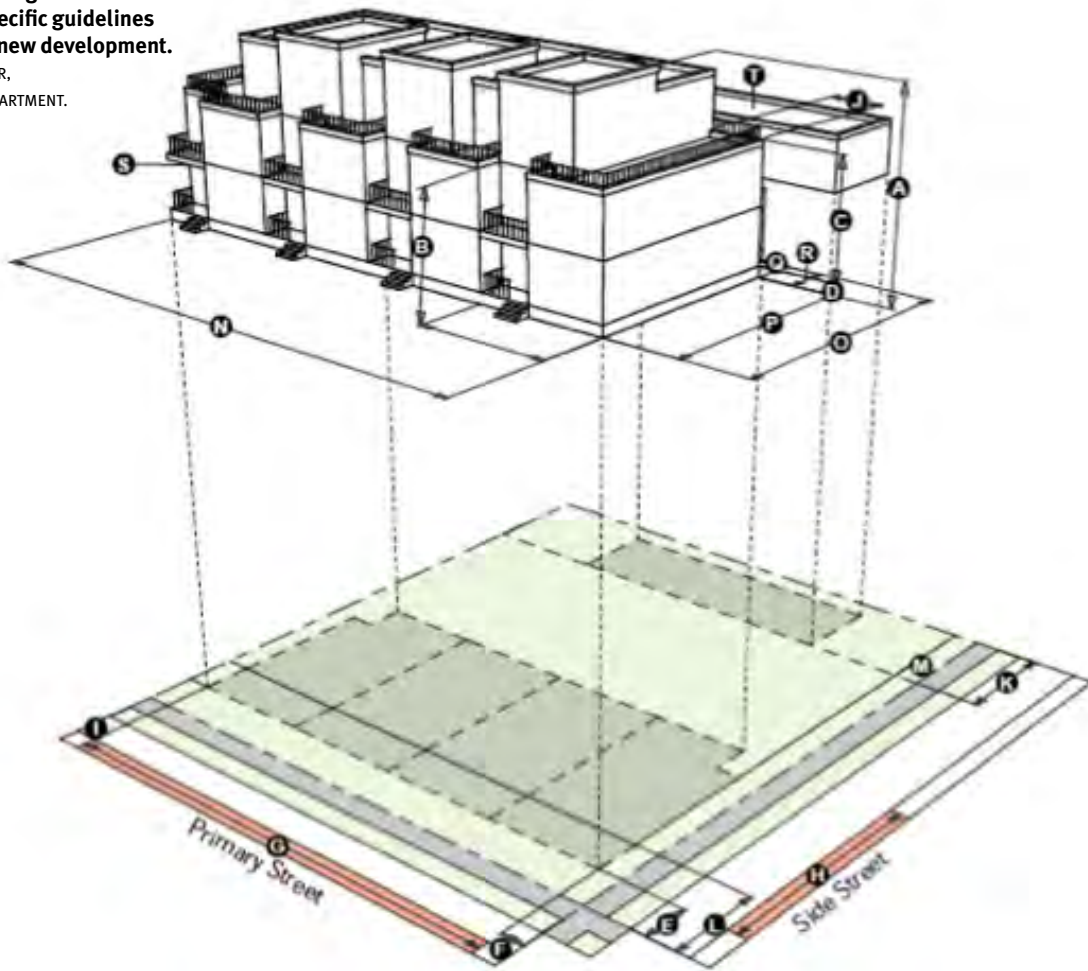
Sometimes land parcels with strong development potential are nonetheless contaminated as a result of former industrial uses. Sometimes substandard structures remain on the land and need to be demolished. Redevelopment authorities help clear and decontaminate the land in order to attract development. While demolition can be relatively straightforward, decontamination can often be an unpredictable and expensive undertaking. The role of the redevelopment authority in this process is to assess the sites and access the funding necessary to prepare them for development. The Denver Urban Renewal Authority, for example, has been instrumental in rehabilitating such sites, including a large one on the SouthWest Corridor LRT that was formerly home to one of the country's largest rubber manufacturers.

4. Establishing design standards:

Redevelopment authorities can also influence the zoning and design processes. Though zoning is generally controlled at the municipal level, redevelopment authorities often work as intermediaries between the city and developers to expedite the permit process and influence zoning changes, both of which can make sites more attractive to developers. In Portland's Pearl District, for example, PDC worked with the city to achieve density and height increases as part of an agreement with the developer to construct the streetcar.

**Denver's design standards
provide specific guidelines
regarding new development.**

CITY OF DENVER,
PLANNING DEPARTMENT.



**5. Participating in real estate development
and commercial revitalization:**

Redevelopment authorities can be instrumental in attracting anchor tenants. As with Portland's PDC, redevelopment authorities can act as intermediaries and negotiators, ensuring that both developers and the city benefit. After initial redevelopment occurs, redevelopment authorities help to attract tenants. Redevelopment authorities generally target anchor tenants — those whose presence attracts other tenants. As an intermediary with the city, the redevelopment authority is frequently able to offer a variety of loans, tax abatements, and other incentives (see Chapter 3) to entice the anchor tenant. Sometimes the redevelopment authority helps the city and the tenant negotiate the level of conformity to design standards and zoning codes (initial tenants often have greater leverage to reject certain criteria they don't

like). Once the anchor tenant commits, other investors are generally more confident to follow, even with less government support and stricter conformity to design standards and zoning codes. During the redevelopment of Pittsburgh's East Liberty neighborhood in the MLK Jr. East Busway BRT corridor, the financing agreement that the Pittsburgh Urban Redevelopment Authority put together with East Liberty Development, Inc. (ELDI) and Mosites Company for Whole Foods Market secured Whole Foods' tenancy in East Liberty.

Pittsburgh's URA played a critical role in assembling the financing for the Whole Foods in East Liberty.

EAST LIBERTY DEVELOPMENT INC.



6. Issuing bonds, borrowing money, investing funds, and receiving grants:

Many cities chose to establish redevelopment authorities because these institutions have the ability to harness different financing mechanisms (see “Financing mechanisms,” p. 82), as opposed to municipal economic development departments, whose powers are more limited (see “City and state agencies and transit authorities,” p. 64). Historically, many redevelopment authorities have used bonds to finance urban renewal projects because redevelopment authorities, unlike municipal governments, can issue bonds without voter approval. Pittsburgh's URA issued \$60 million in Special Tax Development Bonds to fund development anywhere in Pittsburgh. These bonds were backed by a portion of revenue from a 1% sales, use, and hotel excise tax levied on Pittsburgh's regional asset district (RAD).³³

City and State Agencies and Transit Authorities

In the absence of a citywide redevelopment authority, cities like Cleveland, Charlotte, and Eugene have municipal economic development departments, which provide many of the same functions as the redevelopment authorities but are different in that they do not have the ability to issue bonds without voter approval and without limits.

Many cities, like Las Vegas, have both redevelopment authorities and municipal economic development departments. In Las Vegas the redevelopment authority works with developers to implement and provide financing for revitalization, while the municipal economic development department creates, coordinates, and encourages new development, affordable housing, and redevelopment throughout the city.

The most successful TOD projects have come out of cities that had strong city planning and transportation departments that worked in close coordination with each another. The role of a city planning department, with respect to TOD, is generally to approve a vision for the city, make recommendations for zoning changes where they will be most beneficial, and set housing policy. Often the zoning changes must be approved by a separate planning commission or zoning board, an appointed body that oversees the city's compliance with the comprehensive plan. Most city planning departments, including those in all of the cities studied in this report, are also involved with urban design decisions. Typically their role also includes enforcing zoning codes, though sometimes this is the responsibility of the building department.

Other municipal agencies also play a role in TOD. Transportation departments implement long-range transportation plans, often set by the regional planning agency. Other agencies involved include public works departments, which maintain roads, sidewalks, and landscaping; and community development or housing departments, which oversee affordable housing. Sometimes the parks department also plays a role in TOD if building a park or high-quality public space can further stimulate development.

Sometimes transit authorities, which are generally public authorities governed by appointees of the governor, the mayor, and/or the heads of several affected municipalities, also play a role in TOD. In some cases the transit authority owns land and air rights at bus terminals, train and metro stations, and depots. It may, therefore, directly participate in land development by entering into a joint development agreement on such transit agency–owned land. One benefit of this type of joint development is that the transit agency can use a portion of the projected revenue from developing its land to fund some portion of its capital costs or operating costs.

BELOW
Development along Los Angeles' Orange Line BRT has been most prominent around the North Hollywood station area.

ITDP

OPPOSITE PAGE
The World Trade Center Silver Line station in Boston was built on MBTA land but financed by a private developer.

FLICKR BY MVMM





Massachusetts Bay Transportation Authority (MBTA) and Massport worked with a private developer to help finance the underground World Trade Center Station on Boston's Waterfront Silver Line. Some transit authorities as a result have TOD departments to help facilitate TOD on transit agency-owned sites; examples include Denver's Regional Transit District and the Charlotte Area Transit System (CATS) in Charlotte, North Carolina.

In Cleveland, many city agencies worked closely together to ensure that land-use decisions complemented decisions about the HealthLine BRT. While the Greater Cleveland Transit Authority planned and operates the BRT, the city planning department and the public works, community development, and economic development departments were all involved to emphasize the connection between the HealthLine and land use. The Department of City Planning was responsible for zoning changes and planning, while the Department of Economic Development designed and implemented the developer outreach strategy once the HealthLine was operational. The Department of Public Works participated in the corridor beautification process, transforming

segments of the corridor with decorative street furniture and greenery. Finally, the Department of Community Development made funds for station-area planning available to local community development corporations (see "Community development corporations and other nonprofits," pg. 66) and distributed the community block grant funds and tax abatements.

Community Development Corporations and Other Nonprofits

A community development corporation (CDC) is a neighborhood-level body that oversees redevelopment in a specific area. The urban renewal efforts of the 1960s spurred widespread disinvestment in cities from both public and private sources. Suburbanization, combined with the social upheaval of the times, left cities deteriorated and without a sufficient tax base to provide many of the high-quality public services needed to maintain residents and private capital.³⁴ Federal, state, municipal, and private funds poured into cities in the form of affordable-housing tax credits, Community Development Block Grants, workforce development programs, and more, all in an attempt to bring back deteriorated cities. Coordinating these multiple efforts, however, was difficult. CDCs were formed to coordinate and focus the available funds.

Many cities, like Pittsburgh, Phoenix, Boston, Kansas City, and Denver, have both CDCs and redevelopment authorities. In these cases the redevelopment authority provides an overall growth strategy for the region, and the CDC provides a targeted, neighborhood approach to programs. Other cities, like Cleveland, do not have citywide redevelopment authorities and rely more heavily on their CDCs to perform the functions of redevelopment authorities, albeit at the neighborhood level. Kansas City has an Economic Development Corporation (KCEDC), a nonprofit agency that manages the efforts of six statutory redevelopment agencies: the Tax Increment Financing Commission, the Downtown Economic Stimulus Authority, the Land Clearance for Redevelopment Authority, the Enhanced Enterprise Zone Boards, the Port Authority and the EDC Loan Corporation. All of these agencies provide services and incentives to encourage development in downtown Kansas City.

Unlike federal, state, or even municipal government, whose focuses are broader, CDCs are able to select the exact programs and funds they need most in order to begin transforming their communities. Since a CDC focuses on one particular community, its intimate knowledge of the obstacles to that community's revitalization is valuable when it comes to selecting development sites, incentive programs, or financing tools.

Additionally, CDCs occupy a unique space between the community and the private sector — they are able to both organize and advocate for residents and direct financial resources to neighborhoods.

Since established, CDCs have sprung up all over the country, with “over \$100 million in grants and program related investments (PRIs) [from the Ford Foundation] to support the creation and growth of community development corporations.”³⁵ Nearly all CDCs today, including CDCs in the cities surveyed in this report, are involved in affordable housing development, from construction and renovation to homeownership assistance, and neighborhood comprehensive planning. In addition to affordable housing and planning, CDC activities vary according to each community's needs. In some cases CDCs have placed an emphasis on TOD in their communities. In Eugene, the Metropolitan Affordable Housing Corporation CDC has completed several projects near the bronze-standard EmX BRT, including a 104-unit affordable housing complex. Denver's New West Side Economic Development CDC is working to promote development around its LRT and to redevelop the Jody Apartments, a 63-unit affordable housing complex adjacent to the Sheridan light-rail station.

Not only are CDCs important partners for cities and developers, but they also provide for-profit developers with access to myriad low-interest loans that can provide gap financing for projects. This has been accomplished in Pittsburgh, Phoenix, and elsewhere.

Local Initiatives Support Corporation (LISC)

In the early 1980s, as President Reagan was entering the White House, funding for social services and urban programs was cut. Several private foundations, including the Ford Foundation, became concerned about the fate of the movement they had worked hard to support and began to look for new ways to support community development groups. In 1979, a group of Ford Foundation trustees and program officers established the Local Initiatives Support Corporation (LISC). Finding it risky to invest money directly into CDCs, and wishing to increase the management capacity of fledgling CDCs, LISC became the intermediary between foundations and CDCs, determining who could reliably repay loans and get results. The Prudential and Aetna companies, with Ford, invested the initial \$9.3 million to start LISC,³⁶ but today it is supported by numerous organizations, for-profit companies, and public agencies.

LISC helps CDCs access funds in one of two ways:

1. LISC uses its own resources to provide CDCs with access to capital in the form of grants and low-interest loans.
2. LISC acts as a go-between for the various stakeholders in local communities, coordinating interests across different local stakeholders. Collaborating with different stakeholders and sectors gives CDCs access to funding available through these various stakeholders.³⁷



LISC, although a national entity, has regional offices all over the country. LISC

Although it is a national organization, LISC maintains local offices in all of the areas in which it works, giving autonomy to leaders in the local communities. LISC believed that concentrating resources and consensus around community development goals and objectives would produce more successful revitalization efforts. This LISC model became known as community development partnerships (CDPs).³⁸ Furthermore, having LISC behind a CDC established that organization's financial credibility, and many financial institutions became more willing to fund these efforts.

LISC funding has been transformational in many of the cities surveyed for this report. LISC Phoenix has played an important role in the development that has occurred around the Phoenix Metro LRT. It helped to create a regional fund called the Sustainable Communities Fund (SCF), "to incentivize, leverage, and guide development of equitable TOD in areas well served by high capacity transit."³⁹ Capital for the SCF was provided by a \$10 million loan from LISC Phoenix and another \$10 million from Raza Development Fund. Since 2011, the SCF has provided \$12 million in loans for 800 affordable-, workforce-, and market-rate housing units along the LRT corridor, and an additional \$3 million in loans for a health care center adjacent to the LRT corridor.⁴⁰

While not an LISC office, Cleveland's Neighborhood Progress, Inc. (NPI) operates in many of the same ways as an LISC. Founded in 1988 with seed funding from the Ford Foundation, local foundations, and corporations, NPI is the local funding intermediary between CDCs and local foundations, the business community, and government. NPI aggregates foundation and private-sector funds and grants those to local CDCs, and provides technical and financial assistance for environmental assessments of properties. It also has a branch called New Village Corporation, which acts as a real estate development partner with CDCs and private developers; provides gap financing for select developments;⁴¹ and works to make neighborhood revitalization efforts a citywide priority. NPI maintains an organizational board composed of people from the major sectors in the city, and maintains boards for each of its programs to

ensure that each effort receives high support and visibility. NPI's efforts have resulted in not only strong CDCs in Cleveland but also a focus on the development of market-rate housing — which is rare for CDCs — designed to bring back market activity to Cleveland as a whole.

Other Community-level Nonprofits

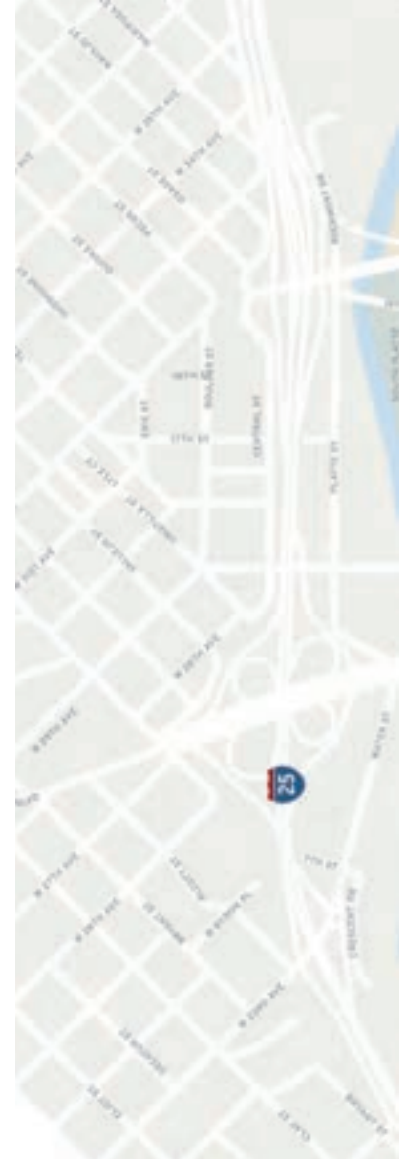
In addition to local CDC and LISC offices, there are also other types of community-level nonprofit organizations that work to support economic development in cities. These nonprofits may focus on a variety of issues, such as community service, education, beautification, and other support services. Several of the cities studied in this report have nonprofits that work to preserve and maintain their waterfronts. In Boston, The Boston Harbor Association worked to clean up the South Boston Waterfront, helping to attract new businesses and development to the fledgling Innovation District.

Foundations

Private foundations can play an important role in the comprehensive planning process as well as in project implementation and financing. Foundations often have access to program-related investment funds, low-interest loans, and grant programs that are not accessible to for-profit developers and government agencies.

Foundations have played an important role locally and nationally in supporting development. As mentioned above, the work of many CDCs would not be possible without LISC, which was created and supported by the Ford Foundation. Similarly, local foundations like the Boston Foundation in Boston and the Arizona Community Foundation in Phoenix have played an important role in providing CDCs with financing for projects and with institutional and operational support.

In Pittsburgh, the development deal that brought in Whole Foods Market catalyzed the development of a larger strategy for what is now the East End Growth Fund, a fund for the revitalization of East Pittsburgh. Local foundations used the investment model developed in the East End Growth Fund to close the gap for the Whole Foods development to scale up all work in East Liberty. The McCune Charitable Foundation, The Heinz Endowments, Roy A. Hunt Foundation, Richard King Mellon Foundation, and The Pittsburgh Foundation collectively gave \$2.47 million to create the East End Growth Fund for local CDCs to use as equity investments in more projects. With cash flow from the Whole Foods project, East Liberty Development, Inc. has been able to start securing lines of credit in addition to the East End Growth Fund for the purpose of buying and revitalizing more properties, especially affordable-housing properties.





Business Improvement Districts (BIDs)

Some cities have what are known as business improvement districts (BIDs). A BID is a defined area within which property owners and commercial tenants pay an additional tax or fee to fund projects and services within the district's boundaries. Denver's downtown BID has invested in streetscape enhancements that have improved the look and feel of downtown Denver to the extent that residential and commercial properties have begun to move back downtown.

A BID can be operated by a nonprofit or by a quasi-governmental entity, but it is typically governed by a board of directors composed of local property owners, businesses, and government officials. BIDs are generally easier to create in economically healthy commercial districts where the surrounding property owners are able and willing to pay additional taxes in exchange for a higher quality of public service and better marketing for the area.

In most cases, a majority of local businesses in the area need to petition the local government to create the BID, and a state or local government must legally approve its creation. After a BID is created, grants acquired by the city for programs and/or incentives such as tax abatements can be made available to existing businesses or used to recruit new business to the area.

The Downtown Council of Kansas City, a BID created in 1981, represents business and property owners and works to market and beautify downtown Kansas City. The Downtown Council also formed a Political Action Committee (PAC) that endorses and provides financial support to candidates for public office who support the downtown and initiatives important to the growth and success of the downtown.

Comprehensive Planning

Once the appropriate institutions are in place, it may be possible for a city to begin planning for TOD. One of the first tools a government can use to begin to direct development into a specific corridor is a comprehensive plan. Comprehensive plans indicate that a city is using its planning powers to focus growth into strategic corridors that are currently served by surface mass transit or where there are plans to do so in the future. A comprehensive plan is often the first step in creating a vision for transit-oriented development in a city.

If a municipality is developing a mass transit line with the intention of reurbanizing an area, the mass transit line is most likely to be effective if it is grounded in a well-considered development plan for the city. Sometimes a comprehensive plan alone can have an impact on the location of developer investments even if it is not particularly enforced with changes in zoning. Such a plan may signal to developers that the municipality is likely to encourage development in a certain area, and hence where developers are likely to encounter a generally more favorable regulatory and fiscal environment. If a comprehensive plan is enforced with zoning changes and implemented in a coordinated manner across multiple municipal agencies and other municipalities in the region, it will be even more effective.

Table 13 shows the corridors we studied, whether or not they were a part of a greater citywide comprehensive plan, and the total TOD investment in each.

As the table indicates, most of the corridors that experienced positive TOD impacts had comprehensive plans that emphasized those corridors. Charlotte's comprehensive plan, *Centers, Corridors, and Wedges*, was adopted in 2010 and prioritizes high-density development around the LRT corridor, which has so far leveraged \$810 million in private investment.⁴² Similarly, Portland's *Comprehensive Plan Goals and Policies*, adopted in 2011, prioritizes development along the LRT corridors in downtown, Hollywood, and the Lloyd District.⁴³ These areas are developing as envisioned in the plan.

In 2002 Denver also created a comprehensive plan, *Blueprint Denver*, which designated "Areas of Change" and "Areas of Stability." The plan aimed to direct growth to Areas of Change and prevent further growth in Areas of Stability. The city followed up this plan with a rezoning of many of the Areas of Change served by both the Central Corridor and the SouthWest LRT line. Because this zoning plan was completed in 2010, it may be too early to have had any significant impact on development.


It is important to note that with the exception of Ottawa, all of the LRT corridors we studied were designated as growth areas in their cities' comprehensive plans. Fewer BRT corridors, on the other hand, have been the focus of comprehensive plans. Those that have had such focus, however, have generally experienced positive growth impacts.

The Eugene–Springfield Metropolitan Area General Plan, which emphasizes mixed-use and high-density development in the downtown Eugene area and around transit stations, specifically references the EmX Green Line BRT corridor.⁴⁴ Doing so has helped to successfully channel \$100 million into the corridor — a significant amount given the small size of the region and the weak overall real estate market.

Table 13. Comprehensive plans can give both developers and communities a vision for redevelopment.

CORRIDOR		INCLUDED IN A CITYWIDE COMPREHENSIVE PLAN?	TOD INVESTMENT (MILLIONS)
 LRT	Portland MAX Blue Line	Yes	\$6,600
 BRT	Cleveland HealthLine	Yes	\$5,800
 BUS	Kansas City Main Street Metro Area Express (MAX)	No*	\$5,200
 SC	Portland Streetcar	No*	\$4,500
 SC	Seattle South Lake Union (SLU) Streetcar	Yes	\$3,000
 LRT	Phoenix Metro	Yes	\$2,821
 LRT	Denver Central Corridor	Yes	\$2,550
 BRT	Las Vegas Strip & Downtown Express (SDX)	Yes	\$2,000
 BUS	Boston Waterfront Silver Line	No	\$1,000
 BRT	Ottawa Transitway	Yes	\$1,000
 BRT	Pittsburgh Martin Luther King, Jr. East Busway	No*	\$903
 LRT	Charlotte Lynx	Yes	\$810
 BUS	Boston Washington Street Silver Line	No*	\$650
 BRT	Los Angeles Orange Line	No	\$300
 LRT	Denver Southwest Corridor	Yes	\$160
 BRT	Eugene Emerald Express Green Line (EmX)	Yes	\$100
 BUS	Las Vegas Metropolitan Area Express (MAX)	Yes	nominal
 LRT	Ottawa O-Train	No	nominal
 LRT	Pittsburgh "The T"	Yes	nominal
 BRT	Pittsburgh West Busway	No*	nominal
 BRT	Pittsburgh South Busway	No	nominal

*Was part of a separate, locally focused plan.

 BRT Bus Rapid Transit

 BUS Bus

 SC Streetcar

 LRT Light Rail Transit

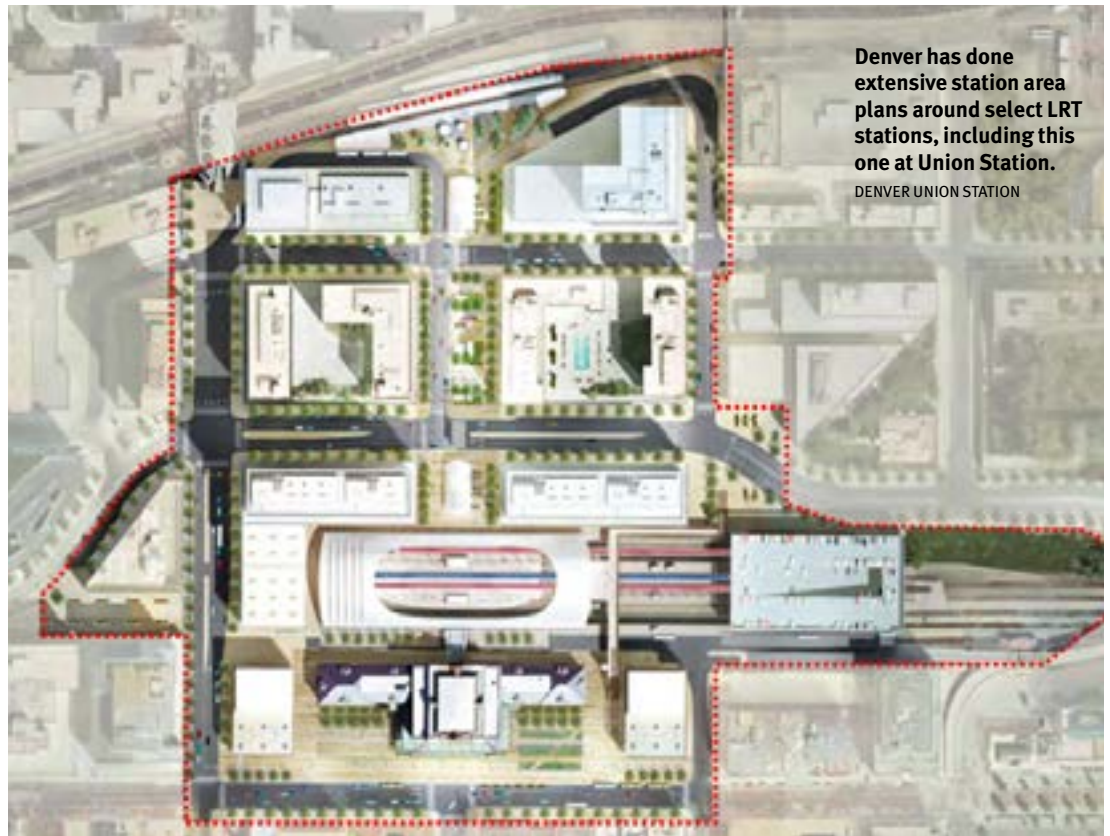
Cleveland, which also experienced positive TOD impacts, has both a citywide comprehensive plan — *Connecting Cleveland 2020* — that directs development to Euclid Avenue,⁴⁵ and a master plan called *Beyond 2005: A Vision for MidTown Cleveland* that focuses specifically on MidTown.⁴⁶ When plans for redeveloping the Euclid Corridor first began to come together in 2007, a mayoral plan called *Making Cleveland A City of Choice* was adopted that emphasized transit-supportive land use. This functioned, in a sense, as an early comprehensive plan.

Los Angeles has a comprehensive plan, the Citywide General Plan Framework, which establishes citywide principles that are the basis for the update of the City's thirty-five Community Plans. Although one of the principles is to focus development around urban transit stations, the citywide plan only mentions the four LRT and two metro lines.⁴⁷ There is no focus on the Orange Line BRT in either the citywide plan or the Community Plans of the communities through which the Orange runs.⁴⁸ Consequently, little development has occurred around the Orange Line BRT with the exception of the intersection of the Orange Line BRT and the Red Line metro, since the Red Line was, in fact, part of the citywide plan. More recently, however, newer local development plans have emerged: *The Warner Center Specific Plan*, for example, is currently undergoing final approval and could begin to have a greater impact on the area.

Ottawa's current comprehensive plan, *Official Plan: A Component of Ottawa 2020*, was created after the 12 municipalities that made up the former region of Ottawa–Carleton amalgamated to create the singular City of Ottawa. Prior to amalgamation, when the Ottawa–Carleton region was less centralized, a regional plan existed that was difficult to enforce because each municipality had its own zoning code. Amalgamation made it easier for the City to realize the vision set out in the current *Official Plan* (now under revision). The plan moved several steps in the direction of encouraging higher-density commercial, retail, and residential development near transit stations throughout the region. It designates 13 mixed-use centers, which include 9 previously designated primary employment centers. Two of the mixed-use centers are located around O-Train stations, while the rest are around Transitway BRT stations.⁴⁹ One target of the mixed-use centers is to employ 200-250 people or provide an equal number of jobs per hectare. Density targets are higher in downtown Ottawa to ensure that it remains the prominent employment center.

In some cases, where no citywide comprehensive plan exists, or where a plan exists but does not emphasize a new area of interest, area-specific plans have been developed. Both Pittsburgh's East Liberty neighborhood⁵⁰ and Portland's Pearl District⁵¹ have created area-specific plans that have produced more or less the same result as other cities' larger comprehensive plans that include neighborhoods.

While a comprehensive plan is a helpful first tool for creating a vision for TOD in a city, the key to achieving the goals laid out in the comprehensive plan is to follow it up with a revision to the zoning code (see "Zoning" p. 74).



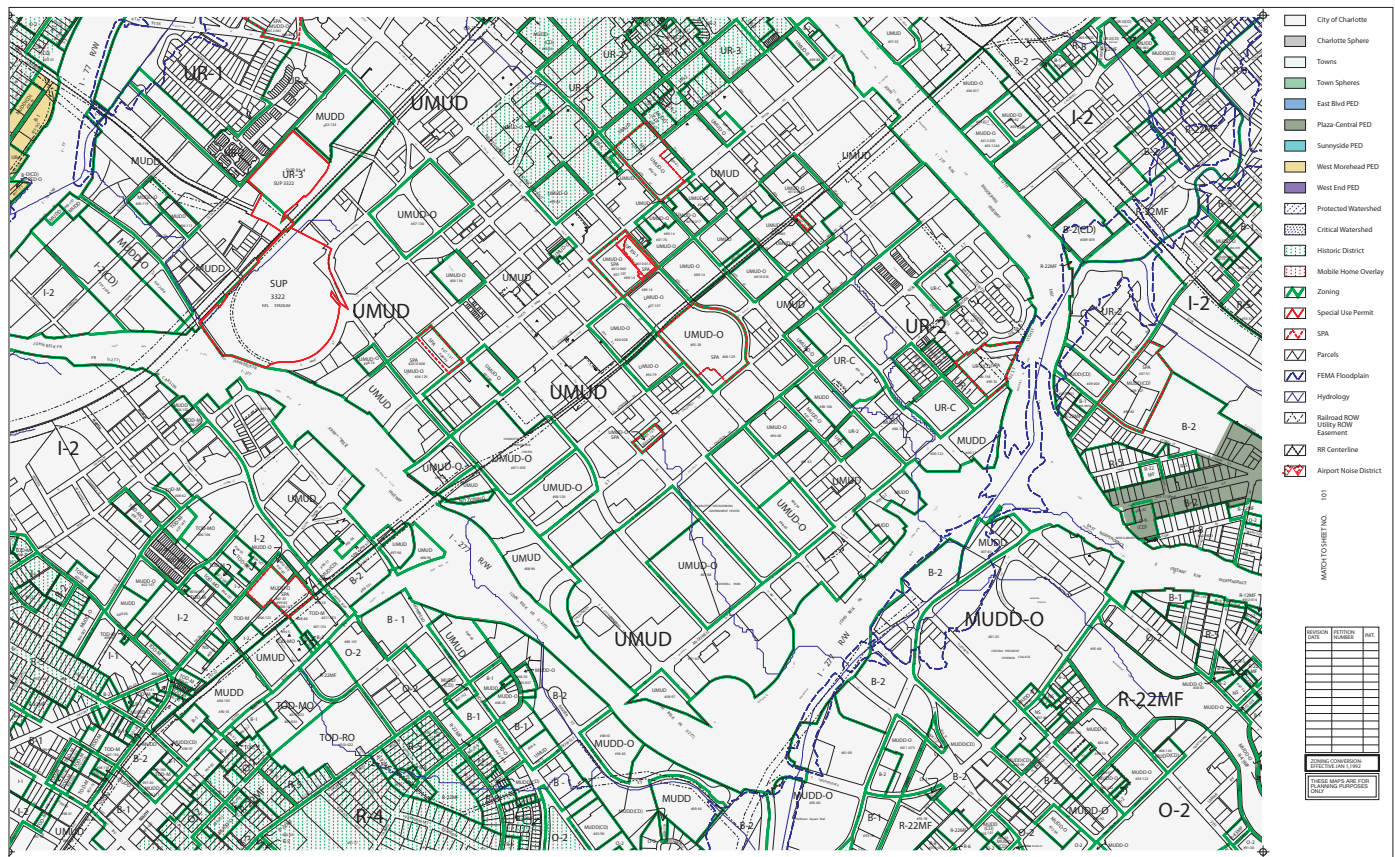
Station-area Planning

Some cities create detailed development plans specifically around station areas. Station-area plans can be a key catalyst for TOD in specific locations, as they are generally more detailed and focused than comprehensive plans. Like comprehensive plans, station-area plans are non-binding planning tools that help governments and communities identify the scale and type of development that is suitable for the area. They take into account all characteristics of an area: current land uses; market-demand, including housing, employment and transit; and street design. They also analyze the impact of current zoning and the potential impact of revised zoning with higher densities and different lot coverage, and with setbacks, height limits and parking requirements.

The city of Charlotte initiated an extensive station-area planning process prior to constructing LRT around many of the Uptown and South End stations. From these station-area plans, the city implemented a TOD zoning district to accommodate the type of growth it hoped to achieve. The TOD zoning district includes a minimum density of 20 units per hectare and a maximum parking requirement of 1.6 spaces per unit; it also mandates that the developments be walkable and attractive.⁵² All of this has helped to direct over \$800 million in private investment around Charlotte's LRT corridor.

Zoning

Most cities in the world have zoning codes that dictate how and where development may occur. Zoning codes play an important role in encouraging or inhibiting potential development on a site because they regulate the amount and type of development as well as its spatial and relational characteristics.⁵³ Depending on the land quality, zoning codes can be used in a number of ways to direct development to certain areas over others. These include regulating for supportive land uses, allowing higher densities — measured by floor area ratios (FARs) and building heights — around transit stations, and prohibiting higher densities elsewhere. Zoning codes are generally created at a citywide scale, but often area-specific zoning codes may also be adopted to override the citywide zoning in a particular area.



Charlotte's zoning map shows the land uses permitted in the South End, where most of the development has occurred.

CITY OF CHARLOTTE

Citywide Zoning Codes

Citywide zoning codes provide a legal framework for the development goals of an entire city. While these zoning codes infringe to some extent on the rights of the individual property owner, they also protect or enhance the character of a neighborhood, so property owners generally accept them as a way of protecting their property values. All of the cities we studied have citywide zoning codes. In most cases, these codes were originally adopted or significantly modified during the automobile-oriented, post-World War II era. At that time, densities were controlled; large quantities of off-street parking were required; urban forms were largely unregulated; desirable development patterns were dispersed throughout the city; and the focus was on segregating land uses. As a result, many sites that were well served by mass transit were zoned for low FARs and for exclusive residential use, characteristics that were better suited to auto-oriented, single-family lifestyles. On the other hand, areas outside of transit corridors were occasionally zoned for higher FARs, creating pockets of dense development where the only transportation option was private automobiles.

Today, while many cities have been updating their zoning codes to put greater emphasis on transit-oriented and mixed-use development, much of the zoning that was adopted during the second half of the twentieth century has proven difficult to dismantle. It is usually possible to freeze zoning as is in many locations and to selectively up-zone in certain other areas (e.g., near transit stations). This was most notably done in Curitiba, where the planning agency froze development outside the city's Rede Integrada de Transporte (RIT) BRT corridors and up-zoned along the corridors themselves for the purpose of directing development along the BRT corridors. However, freezing zoning only works favorably in select areas where development is generally at capacity. Where there is excess capacity in the form of unmet FARs, and a city wishes to direct development away from these areas, it is nearly impossible to down-zone.

Portland has experienced this problem acutely. The city revised its zoning code to allow higher densities and a more intense built-up environment along the full length of all of its light

rail corridors as well as in other areas it hoped to revitalize. This widespread up-zoning, however, undermined the city's ability to target growth more carefully. Competition from strong land markets in certain parts of the city has pulled development away from other locations that are desirable but nevertheless have a weaker real estate market. The Gateway Transit area, for instance, was up-zoned as part of Portland's zoning code revision. Although the area has the highest concentration of public transit in the city, with the MAX Blue Line LRT, the Green and Red LRT lines, and several bus routes passing through it, it has had difficulty attracting new development because of competition with other areas that are also zoned for high densities. In short, revised zoning in the city of Portland has resulted in excess capacity citywide, and the city is unable to down-zone to correct this problem. Allowing developers to build for higher densities as-of-right in most parts of the city effectively under-mines the future use of zoning as a tool for directing development toward a particular site.

Revising existing citywide zoning codes to provide the highest FARs in a select number of areas near transit stations is a first step toward using zoning to encourage TOD. Creating a market for transferable development rights (TDR), which are discussed in more detail in the section "Incentive Zoning," (see p. 80) then becomes an important tool for selling off additional capacity in non-transit-oriented areas allowed for in original zoning codes. The city of Seattle is in the process of implementing a TDR program that allows landowners in non-transit-oriented locations to sell their incremental development rights to a TDR market. Developers in the South Lake Union area are purchasing some of these rights so they can up-zone beyond the existing FAR level permitted by the existing zoning code.

Parking regulations also play an important role in encouraging transit-oriented development and are included in zoning codes. State-of-the-art, off-street parking regulations can establish an area-wide cap at a level low enough to minimize traffic congestion. Ottawa, for example, has a parking maximum near transit stations, and even lower parking maximums in the downtown;⁵⁴ together these form the principal reason for high

Curitiba, Brazil froze development outside of the RIT corridors, limiting high density development around the transit corridors.

CONNOR COX



ridership on the city's BRT system. Boston Proper, South Boston, and East Boston have had parking freezes in place since the 1970s, and these areas continue to maintain very restrictive parking policies in the areas served by the Silver Line.

Other than parking caps and freezes, the next-best policy is to limit parking in locations served by BRT or other mass transit. State-of-the-art policy also requires any ground-floor parking to be structured and wrapped with ground-floor retail activity. Ideally, surface parking lots are either prohibited altogether or located at the rear of the building, away from the main commercial street, to avoid destroying the vitality of the street. Outmoded parking regulations generally require a high minimum level of off-street parking per residential unit or per square foot of commercial real estate, regardless of transit proximity. This off-street parking often blights the ground floor of the building, particularly if it is in the form of surface lots. Some downtowns, such as Cleveland, no longer have such parking minimums. In Cleveland's Midtown area, new zoning changed the off-street parking requirements from a minimum to a maximum, and reduced this maximum to one-third of the original minimum requirement. The new zoning also prohibited locating parking along Euclid Avenue, requiring it instead to be located behind buildings.

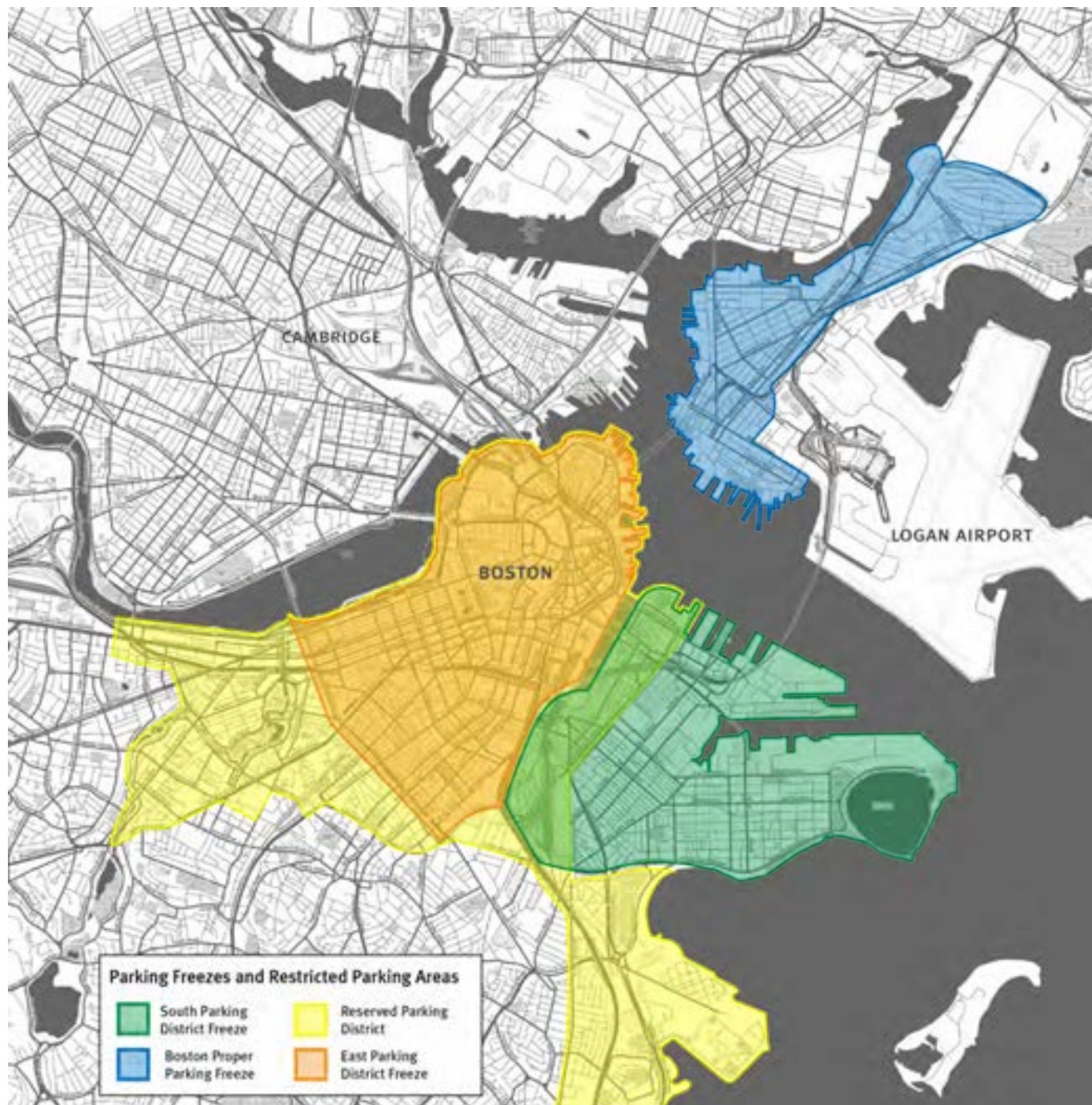
In cities with weak land markets, there is often a conflict between maintaining overly

permissive zoning codes aimed at encouraging any and all development, and changing these codes to be more restrictive — allowing higher FARs only near transit, for example, and including more restrictive requirements for parking, urban forms, and densities. Las Vegas maintains extremely permissive zoning regulations but retains the ability to review new development on a case-by-case basis. Until recently, this has resulted in single-use, nearly unchecked development. Only since the recession has Las Vegas begun to use its powers more aggressively to review each proposal and to direct development into downtown, near the SDX corridor.

Some cities also complement their zoning codes with an urban growth boundary to limit development to a certain area. In both Portland and Ottawa, the urban growth boundary both constrains urban growth and separates land that can be urbanized from land that is rural.

The Boston parking freeze limits the availability of commercial parking spaces in designated areas around Boston, including the Waterfront Silver Line corridor.

CITY OF BOSTON



Area-specific Zoning

Even if a city changes its overall zoning code, that code may sometimes not be suited to address specific development issues raised by a TOD site. Recently, governments have begun to create area-specific zoning approaches that promote flexibility and are tailored to address issues in the designated area. One of these tools is an overlay zone: a zone superimposed on an existing zoning area that establishes a special set of regulations or incentives that override the current regulations in the area. Such zones can include regulations that allow higher densities; encourage a mix of residential, commercial, and employment uses; reduce minimum parking requirements and auto-oriented uses (or establish parking maximums); and/or promote urban design that encourages the use of public transit.

Sometimes overlay zones are initiated as a result of specific station-area plans. Some cities discussed in this report (e.g., Eugene, Phoenix, Charlotte, and Portland) have created TOD overlay zones tailored to specific station areas or segments along the transit corridor. Eugene's TOD overlay zone, around the EmX BRT corridor, establishes a minimum density and a maximum setback, and requires active ground floors on most buildings. As a result, this overlay zone has helped leverage the development of a new student housing complex and hotel as well as several new commercial spaces. Charlotte has created a similar TOD zoning district, with parking maximums, minimum density requirements, and design guidelines around its LRT.

Other cities, including Los Angeles, Boston, Cleveland, and Las Vegas, created broader zoning districts beyond a specific transit station or corridor. In Cleveland, for instance, the MidTown Mixed Use District covers two to three blocks along the Euclid Avenue corridor in the MidTown neighborhood. The district's regulations promote active street frontages and encourage commercial uses. In Portland's Hollywood District, zoning concentrates residential and commercial development around the transit station and restricts auto-oriented uses along the main boulevard (historically, the area was filled with auto dealerships and drive-through establishments). In Las Vegas, the city has created the Downtown Centennial Plan Overlay District,

which encourages transit- and pedestrian-oriented development by overriding existing regulations on building height, building setback, and parking, and by evaluating each development on a case-by-case basis.

In Denver, the code itself dictates the form,⁵⁵ and the TOD design is inherent in areas designated as Urban Neighborhood, General Urban, Downtown, or Urban Center. Charlotte is also taking a different approach from the other cities by establishing a TOD area within one-quarter mile of its LRT corridor. The area has some regulations but allows for rezoning to higher densities, altering design guidelines, and tightening parking requirements upon request.

By contrast, Boston uses overlays and special districts in its zoning code to emphasize transit connections, but not around the Waterfront Silver Line corridors studied in this report. In Boston's South Waterfront, the city suspended existing zoning and established an "Interim Planning District" that has no specific guidelines and relies heavily on developer-city negotiations.⁵⁶ Pittsburgh, on the other hand, has not created any transit-oriented overlays or emphasized transit connections in any of its special district plans. Both Boston and Pittsburgh have relaxed their zoning codes to the extent that developers can engage with the city to reach an agreement that meets both parties' objectives.

Kansas City, in addition to adopting the Greater Downtown Area Plan, which encourages transit- and pedestrian-oriented development, amended its zoning code to include a Special Review Overlay and Urban Redevelopment Overlay, both of which are mixed-use and pedestrian-oriented in nature.

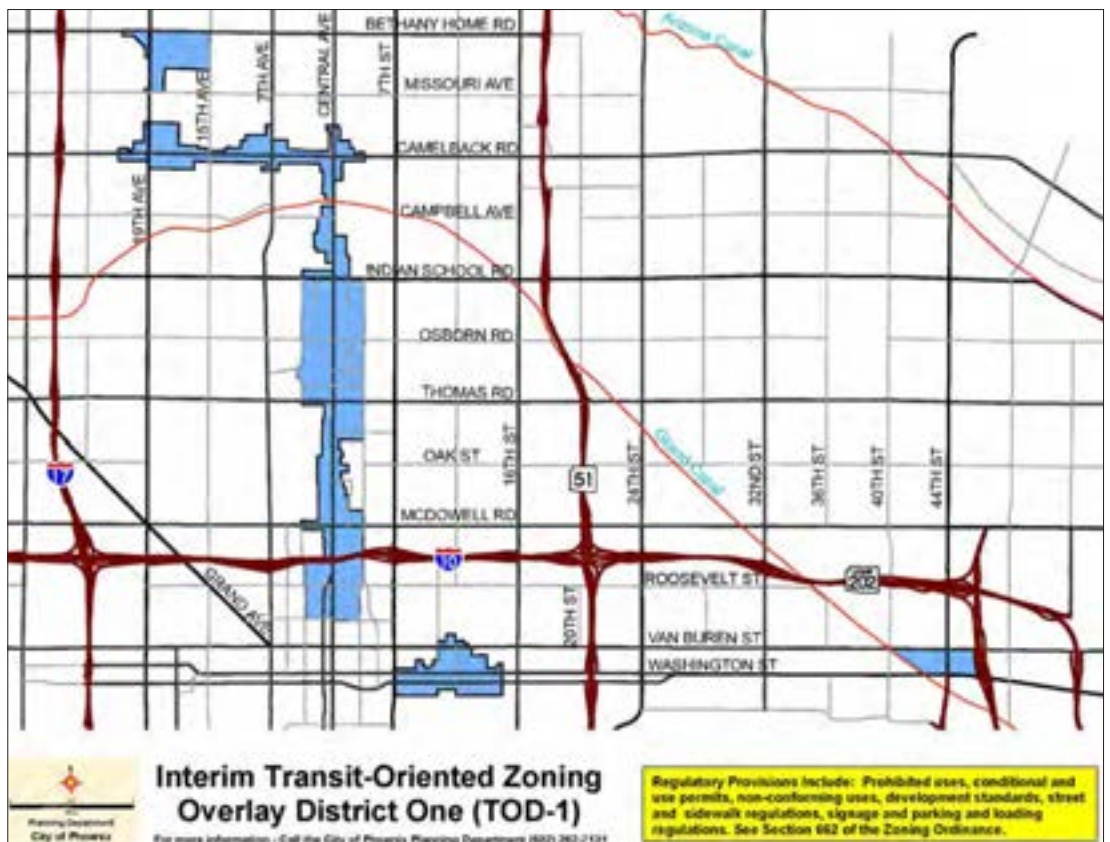
The green zone indicates the boundaries of the Boston interim planning district, which contains no specific regulation.

BOSTON REDEVELOPMENT
AUTHORITY



Phoenix's TOD Overlay Zone spans the entirety of the LRT corridor.

CITY OF PHOENIX/VALLEY METRO



Incentive Zoning

In Strong or Emerging land markets, developers may have such a strong desire to add building height or density that they may be willing to provide certain amenities to the community in exchange for density bonuses.⁵⁷ In Seattle's South Lake Union area, for example, developers wishing to build above the base allowable height and FAR can receive additional, or bonus, floor area if they agree to allocate 15.6% of it to affordable housing. In non-residential developments, the City of Seattle requires the developer to provide on-site childcare facilities in exchange for additional building height.⁵⁸ A developer applying for additional floor area under this incentive zoning program must also meet certain minimum requirements that include a LEED certification of silver or better, a transportation management program that demonstrates that no more than 40% of trips to the site will be made using single-occupant vehicles, and an energy management program that demonstrates that all energy needs can be accommodated using the existing electrical system.⁵⁹

Some regions are also using transferable development rights (TDR) programs to sell density bonuses to developers. TDR allows development rights to be bought and sold through a TDR market and, in certain cases, with some government oversight and/or intervention. This means that development rights must first be purchased from a willing seller with excess development capacity; the purchase must be made either by a brokering entity or by an interested developer directly. In the best-case scenario, a TDR program can encourage landowners in areas designated as open space or farmland, or even in those areas not slated for densification, to refrain from developing their property. The new zoning in a purchased or sold area then becomes permanent. This program could potentially help address problems such as those described above in Portland, in which too much development is allowed in the city as-of-right, which does little to encourage dense development in specific locations.

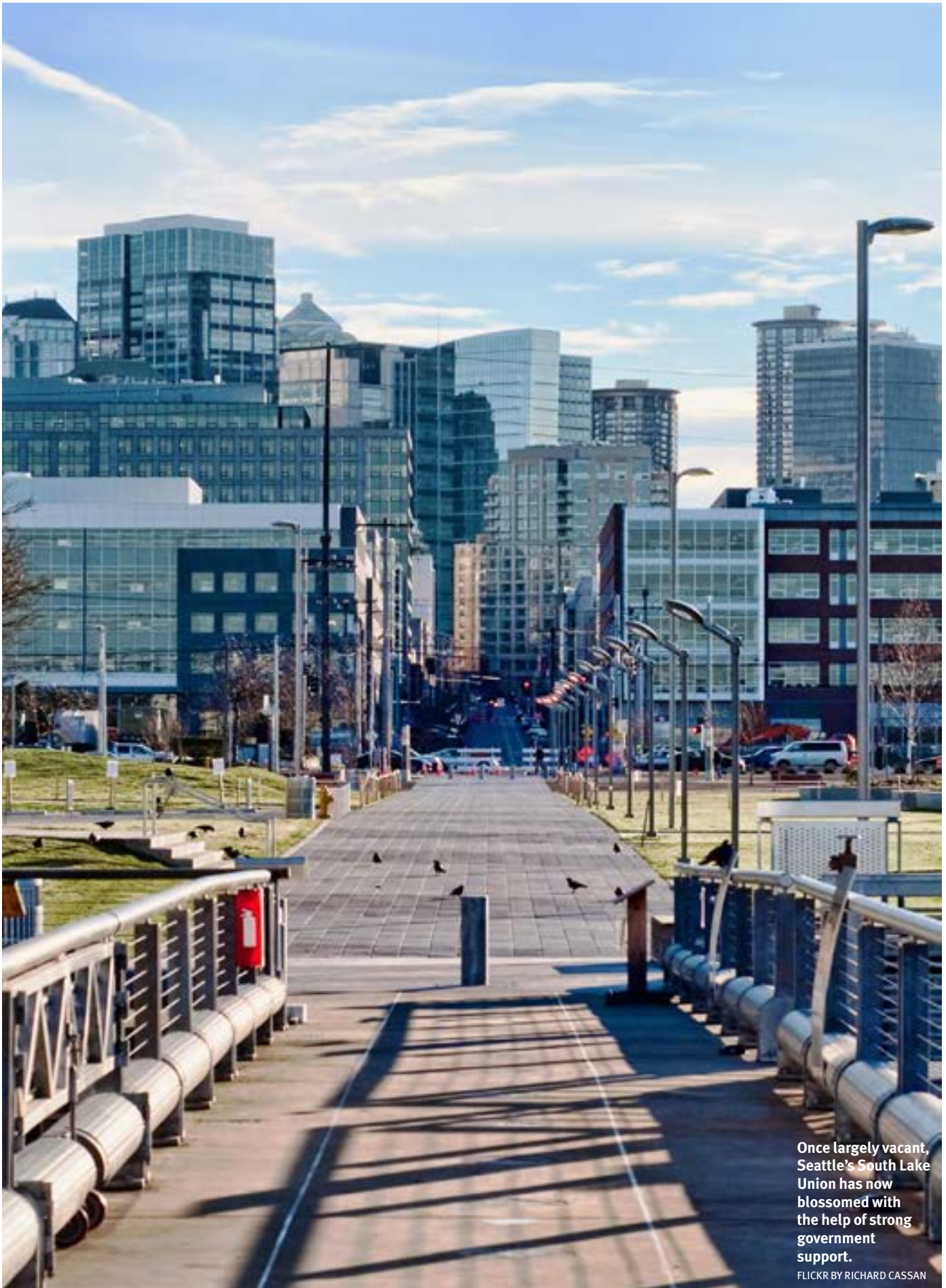
Seattle's South Lake Union area, a best practice in incentive zoning and TDR, is in the process of transitioning to an innovative

Table 10. TDR exchange ratios in King County, Washington.⁶⁰

TYPE OF TDR ACQUIRED	EXTRA FLOOR AREA GAINED PER CREDIT (EXCHANGE RATIO)	
King Country Farm Credits	1,120	1,640
King Country Forest or Rural Credits (proceeds are reinvested in Farm Credits)	1,030	1,500
Pierce County Farm Credits	290	420
Snohomish County Farm Credits	670	980
Pierce and Snohomish County Forest Credits (proceeds are reinvested in Farm Credits)	590	860

TDR and financing program that will supplement its other incentive zoning initiatives. The program, known as the Landscape Conservation and Local Infrastructure Program (LCLIP), specifies that 33% of bonus floor area in South Lake Union must be acquired through TDR. The Seattle Municipal Code has adopted an exchange ratio (see Table 10, above) that accounts for the varying prices of land in the region and is intended to focus on the acquisition of farm, forest, and rural credits.⁶¹

The program will be brokered through a King County-established TDR bank. In addition to being a progressive TDR pro-gram, the LCLIP is taking advantage of large amounts of unmet demand in the South Lake Union area by doubling the TDR zone as a Tax Increment Financing (TIF) zone. Under this TIF zone, the portion of property taxes generated by new development will be reinvested in infrastructure within the same zone for up to twenty-five years (see "Tax Increment Financing," p.85).



Once largely vacant, Seattle's South Lake Union has now blossomed with the help of strong government support.

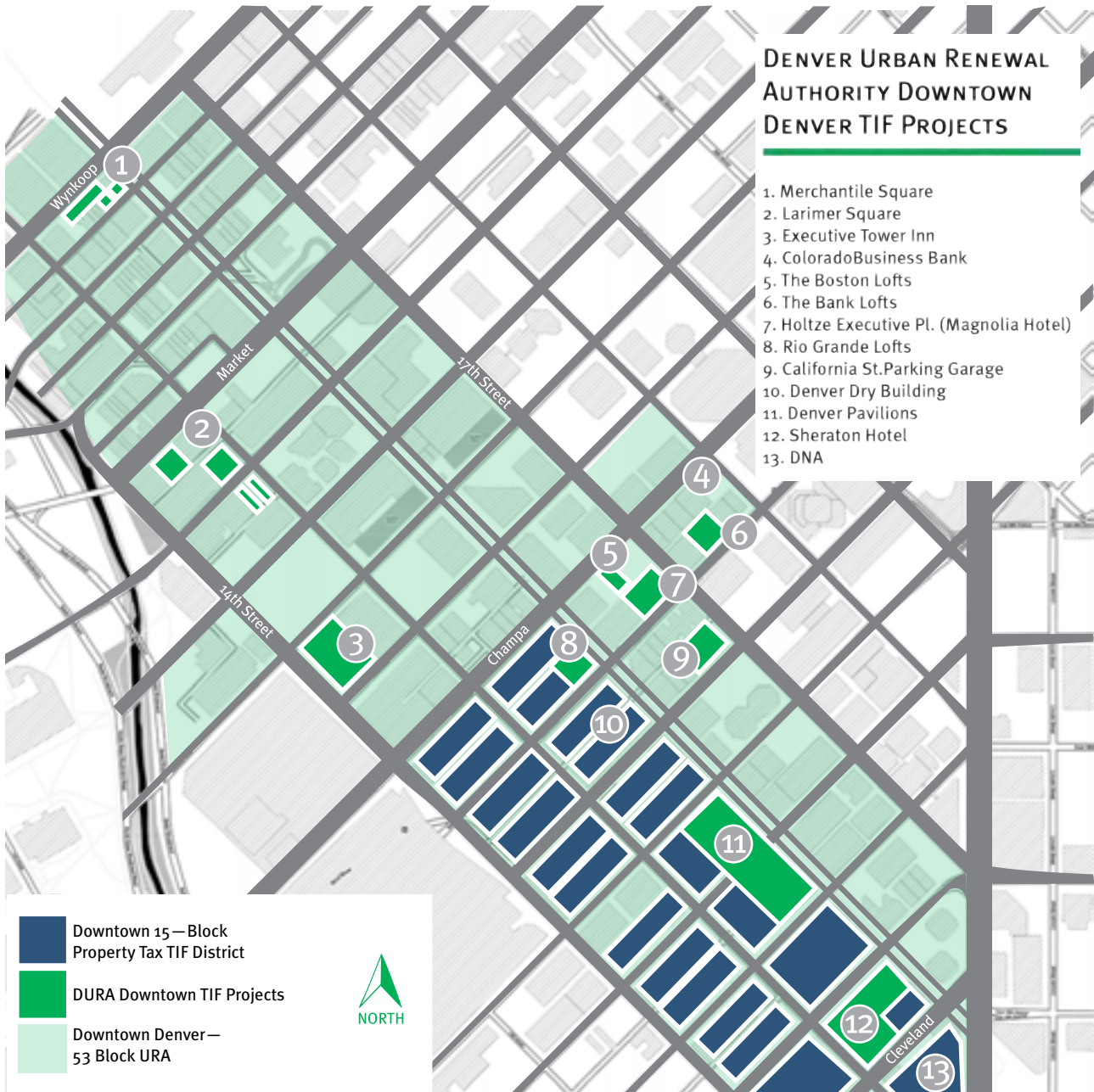
FLICKR BY RICHARD CASSAN

Financing Mechanisms

To stimulate development in any type of land market, a range of financial programs exist that can mitigate risk, cover a portion of the costs of development, or reduce operating costs.

National, state, or provincial governments, although less directly involved in local development than municipal governments, often provide grants and provisional funds for planning and land acquisition for development purposes. Typically, a redevelopment authority will use bonds to finance the purchase of land and improvements to its infrastructure. Often, bonds will have some sort of dedicated revenue stream that guarantees repayment, either from taxes or from a specified revenue-generating entity (toll roads, water utility fees, sanitation utility fees, etc.). But if developers are willing to purchase the land at a higher price, the city can make a small return on their investment, which can then be dedicated to additional projects.

Bond financing has become less common and more risky for municipalities in recent years because of the economic recession and shrinking tax revenues. The sale and eventual repayment of general obligation and revenue bonds depends on the taxes that are available (for general obligation bonds) or on a dedicated funding stream (for revenue bonds). In weak economic markets, both of these revenue streams are less secure, and therefore less favored by investors. For these reasons, many cities are now using Tax Increment Financing, favorable loan programs, and tax abatement programs more widely.



TIF has helped finance many projects in downtown Denver.

DURA

TIF helped Vertex
secure land on the
South Boston
waterfront for a
brand new building.
FLICKR BY OFFICE OF
GOVERNOR PATRICK





Tax Increment Financing

Tax Increment Financing, or TIF, enables local governments or redevelopment authorities to invest in infrastructure within a TIF district by capturing the increase in the district's property values (hence its property tax assessments) that are generated by the infrastructure improvements. TIFs are generally restricted for use in areas designated as blighted. Capturing this additional tax increment enables municipalities to pay for improvements without relying on other government funding or issuing other, less attractive, debt instruments. TIF funds are also enticing to developers because they must be spent within the TIF district, so the developer is assured that funds will be available to maintain the area and prevent it from falling into disrepair. In this sense, TIF reduces risk and provides a sense of financial security to developers for long-term investment and maintenance.

Several of the cities in this study (e.g., Portland, Boston, Kansas City, Pittsburgh, Denver, and Cleveland) have used TIF for urban development projects. Denver has used TIF to finance twelve projects in its downtown, including Larimer Square, the Adams Mark Hotel, and the Bank Lofts. Boston used TIF to help the pharmaceutical giant Vertex set up its headquarters on the South Waterfront. Vertex's development costs on its 1.1 million-square-foot plot, which it is renting from the City of Boston at a cost of \$72.5 million per year, are being partially financed by a seven-year TIF that will produce \$12 million. TIFs have been used in downtown Kansas City to develop the Aladdin Hotel, a building for a major garment manufacturer, and for the rehabilitation of an historic building, among other purposes. Pittsburgh also uses TIF, but since Pennsylvania state law limits TIF districts to no more than one-tenth of a municipality's total land value, the state developed an alternative mechanism called a Transit Revitalization Investment District (TRID). TRIDs are similar to TIF in that they use a district-based tax increment financing mechanism to capture increases in property values near transit for the purpose of funding infrastructure investments. However, unlike TIF, TRID does not require finding "blight" in the area where it is used and focuses on encouraging comprehensive community-based planning. Although many areas,

including the East Liberty Station area along Pittsburgh's MLK Jr. East Busway BRT, have used TRID financing for station-area planning, it has yet to be used for financing new development.

Finally, a less common but interesting practice attached to TIF is a set-aside policy for affordable housing. In this regard, the City of Portland leads the other cities studied in this report with its TIF 30% Set-Aside Policy.⁶² Following the creation of the Portland Housing Bureau (PHB) in 2010, the Portland City Council unanimously approved an ordinance requiring that the city set aside a minimum of 30% of aggregate citywide TIF revenue for affordable housing.⁶³ Similarly, before it disbanded its redevelopment authorities and TIF districts, the State of California required 20% of TIF revenue in TIF districts statewide to be set aside for affordable housing.

Favorable Loans to Developers

Cities facing significant fiscal distress are generally reluctant to provide tax abatements to developers that deprive the city of future tax revenues. Most cities prefer instead to offer low-interest loans to developers for real estate investments in strategic locations. Cleveland's Euclid Avenue corridor passes through a federal "entitlement zone," an economically distressed area eligible for Section 108 low-interest urban development loans administered by the Economic Development Initiative (EDI) of the US Department of Housing and Urban Development (HUD).⁶⁴ Some of the loans are administered directly by HUD, others by state governments. These are mostly forgivable loans to developers that do not have to be repaid until the development earns a certain amount of revenue. The City of Cleveland received \$3 million in direct aid and \$87 million through HUD's EDI for an empowerment zone on the East side of Cleveland, including Midtown.⁶⁵ Most of these funds were in the form of low-interest forgivable loans.

Pittsburgh created the Pittsburgh Development Fund, which receives an earmarked percentage of various local tax revenues against which it issues bonds. The bond revenues are then loaned to developers in strategic locations like East Liberty. If a project fails, the loan is never repaid; but in the more likely event that a project is successful, the developer repays the loan plus interest. This repayment is then reinvested in the revolving loan fund, to be lent on the same terms to developers of other strategic projects. These sorts of concessional loan instruments are advantageous because they do not undermine the city's long-term property tax revenue base, and they maintain funds for future projects.

Tax Abatement Programs

Tax abatement programs encourage new development by providing developers with significant property tax relief over a number of years. Projects may have their taxes deferred or phased-in over a span of several years, which reduces the start-up costs. Portland's TOD tax abatement program, called the Multiple-Unit Limited Tax Exemption, reduces operating costs of TOD projects by providing a 10-year property tax exemption on the residential portion of developments located within a one-quarter-mile radius of all MAX station areas. Kansas City's Economic Development Corporation also designated the Kansas City CBD as an urban renewal district, which assists developers in the removal of blight and blighting conditions by offering a property tax abatement of up to 100% for up to ten years, as well as the use of TIF to finance projects.

The Federal Historic Preservation Tax Incentives program has also been important in directing development and revitalization efforts to downtown communities. Cities like Cleveland historically had active downtowns and nearby neighborhoods served by public transit. Prior to redevelopment, many buildings lining the Euclid Avenue corridor were eligible for historic restoration tax credits. As contemporary transportation solutions were introduced, tax credits for historic buildings were an important part of the financing package that encouraged developers to choose downtown locations along transit corridors over suburban developments.

Grants

Federal, state, and private grants are funds that cities do not have to repay. While at one point states, developers, CDCs, and other nonprofits relied heavily on federal grants, the current economic climate has forced many of these organizations to become more creative in their search for funding. For urban land development, HUD is the agency responsible for most of the federal programs, although funds can come from the US Department of Health and Human Services, the US Department of Transportation, or the Federal Transit Administration. There are two general types of federal grant programs that are competitively awarded.

1. Categorical grants

Categorical grants are either project-specific grants or formula grants for which the project must meet a specific threshold (for example, a certain density or percentage of low-income residents). Portland and Pittsburgh both used HOME funds, a categorical grant, to revitalize and construct new affordable housing.

2. Block grants

Block grants are also provided by the Federal Government but are administered by the states. All of the US cities studied for this report are recipients of Community Development Block Grants (CDBG). Pennsylvania used CDBG funds to support planning activities in Pittsburgh's East Liberty neighborhood, and Colorado used CDBG funds to help the Denver Urban Renewal Authority finance redevelopment activities in downtown Denver.

For both types of grants, the Federal Government provides the funds and the state administers the grant. However, the Federal Government also provides some funds directly to developers. HUD, for example, provides insured loans, risk-sharing programs, grants, and other financing programs directly to developers.⁶⁶ The Geis Company in Cleveland received a HUD loan for a development in the MidTown district along the HealthLine BRT.

At the state level, grants are typically available via a state-level housing, environmental, or economic development department. State grant programs are administered with similar stipulations as federal grants. For example, Massachusetts' Downtown Initiative provides grants to cities to enable them to revitalize their downtowns. Some state-level grants are available for the cleanup of brownfield sites to prepare them for redevelopment. Cleveland used several million dollars in "Clean Ohio" grants for decontaminating brownfields along the HealthLine BRT corridor. As part of the redevelopment of a former Nabisco factory along Pittsburgh's MLK Jr. East Busway BRT, a \$1 million grant from the Pennsylvania Department of Environmental Protection helped then owner – Regional Industrial Development Corporation (RIDC) a private nonprofit development corporation – clean up PCBs, underground storage tanks, asbestos, and lead-based paint.

Finally, private or foundation grants are discretionary and are typically available to nonprofits, CDCs or joint ventures between CDCs and private developers.

Capital Improvements

In addition to using financial incentive programs, cities can invest in a variety of non-transit infrastructure to encourage development. Enhancing public spaces, reconstructing water mains and sewers, burying power lines, and other such improvements can all help raise the value of surrounding plots of land and make them even more enticing to developers.

As an example, Cleveland did not restrict its investments into the Euclid Avenue corridor to the BRT-related infrastructure. The city submerged power lines that had been an eyesore, installed fiber-optic telecommunications cables, rebuilt ancient sewer and water lines, and significantly improved the cycling and walking environment with street furniture, new shade trees, local art, and other urban amenities. BRT aside, these public investments raised investors' confidence by assuring them that the City of Cleveland was dedicated to the commercial survival of the Euclid Avenue corridor.

Charlotte has also used capital improvements to encourage development. Along the Lynx LRT corridor, the city invested in high-quality sidewalks as well as new light fixtures and street furniture. Along the Las Vegas (SDX) corridor, the city rehabilitated disused neon Las Vegas Strip signs, making the busway a more dynamic and attractive environment.

These examples clearly show that long-term investments by cities do much to attract developers. Such investment benefits not only the cities themselves but also the interests of developers and the general public.



Charlotte built wide sidewalks adjacent to the Lynx to encourage more pedestrian activity.

ITDP

Land assembly



Ownership of land by the appropriate entity is the key to urban transformation and property development. When land ownership is fragmented, as is the case when different landowners own numerous contiguous small parcels, the redevelopment process is hindered, and assistance to developers to acquire and assemble small parcels of land can be a critical driver of development.

Governments and redevelopment authorities can ameliorate the fragmentation problem by assisting in the land assembly process in various ways, such as through land banking and by acquiring properties via eminent domain. While the latter can be controversial, the former has been used successfully in many cities. Land banks are government or nonprofit entities that acquire, hold, and manage vacant, foreclosed, or abandoned properties. Land banks help promote redevelopment by exercising powers authorized in state and local statutes, such as the ability to waive taxes and clear titles. When redevelopment is desired, governments will transfer land to private developers under conditions that guide the way in which the property will be developed.

Several cities reviewed for this report have used land banks to promote land development and meet affordable housing goals. Denver has a land bank fund that focuses on creating affordable housing within a half mile of transit. The City of Denver, the Urban Land Conservancy, and Enterprise Community Partners (a local affordable housing NGO) jointly manage the fund, which has evolved to hold \$30 million in capital. Charlotte has a similar entity — the City of Charlotte, with Coldwell Banker Commercial and the Charlotte Area Transit System, established an acquisition fund to purchase land near stations on the Lynx LRT to ensure the development of mixed-income, mixed-use TOD. To date the fund has been used to develop the Scaleybark station area.

CHAPTER 4

BRT, LRT, Streetcars, and their Impacts on TOD

The analysis in Chapters 2 and 3 shows that transit investments alone, regardless of their quality and mode, are rarely sufficient to induce development. The level of TOD investment that can be expected depends not only on the quality of the transit investment but also on the level of private developer interest in the surrounding land and on the level of government intervention to support TOD.



Right off the HealthLine BRT on Euclid Avenue, East 4th Street has become a vibrant hub of activity in downtown Cleveland.

LAUREN PARSELLS

Despite the similarities between LRT, streetcar, and true BRT, the lack of a standard definition for BRT has led in turn to a lack of understanding of what a true BRT system is, and hence what its development potential might be. As a result, many marginal non-BRT bus improvements have been labeled BRT. When they failed to stimulate any TOD investment, opponents of BRT argued that BRT is unable to stimulate TOD. Hank Dittmar and Shelley Poticha have noted, “[D]evelopers and home buyers alike seem to be attracted to the permanence of rail transit.”⁶⁷ Others believe that BRT is just not nice enough to leverage land development.

In the US, until about a decade ago, it wasn’t. But over the past decade, the emergence of seven new corridors that rank as true BRT constitutes a major first step toward establishing a new paradigm for bus transport in the US. The emergence of *The BRT Standard* as a way to separate true BRT systems from bus priority projects that seem “impermanent” or “not as nice as rail” is another important step.

Internationally, gold-standard BRT systems have been stimulating development for decades. Curitiba’s BRT is one of the world’s best practices in linking BRT with TOD, having leveraged billions of dollars in private investment and created a truly compact, well-formed city. Bogotá’s gold-standard TransMilenio BRT system has also seen significant development near stations, with higher densities and a better land-use mix,⁶⁸ though the land development impact of TransMilenio would have been greater if it had been supported by changes in zoning and other measures.



































Now that there actually are mass transit corridors in the US that classify as true BRT, and we have reviewed the other factors that improve the chances of good TOD impacts, we can look more carefully at the differences in development impacts between BRT, LRT, and streetcars.

Analyzing the Causes of TOD Impacts

In order to determine which factors are most important in stimulating development, we compared 21 surface mass transit corridors representing three modes — BRT, LRT, and streetcar — in 13 cities in the US and Canada. We began by collecting information on the total TOD investment around each corridor. Using these results, we grouped the transit systems into three typologies, as follows:

- **WEAK TOD IMPACTS** (nominal investment)
- **MODERATE TOD IMPACTS** (\$100 million–\$2.9 billion)
- **STRONG TOD IMPACTS** (\$3 billion or more)

Table 11. TOD investments of the corridors show little correlation to their *BRT Standard* score.

CORRIDOR	BRT STANDARD	TOTAL TOD INVESTMENT (IN MILLIONS)	DEVELOPMENT PER DOLLAR OF TRANSIT (IN MILLIONS)
STRONG			
 Cleveland HealthLine		\$5,800	\$114.54
 Kansas City Main Street Metro Area Express (MAX)	Below Basic	\$5,200	\$101.96
 Seattle South Lake Union (SLU) Streetcar	Below Basic	\$3,000	\$53.57
 Portland Streetcar	Below Basic	\$4,500	\$41.48
 Portland MAX Blue Line		\$6,600	\$3.74
MODERATE			
 Las Vegas Strip & Downtown Express (SDX)		\$2,000	\$42.28
 Boston Washington Street Silver Line	Below Basic	\$650	\$20.97
 Denver Central Corridor		\$2,550	\$14.88
 Eugene Emerald Express Green Line (EmX)		\$100	\$3.96
 Pittsburgh Martin Luther King, Jr. East Busway		\$903	\$3.59
 Phoenix Metro		\$2,820	\$1.99
 Ottawa Transitway		\$1,000	\$1.71
 Charlotte Lynx		\$810	\$1.66
 Boston Waterfront Silver Line	Below Basic	\$1,000	\$1.39
 Los Angeles Orange Line		\$300	\$0.83
 Denver Southwest Corridor		\$160	\$0.71
WEAK			
 Ottawa O-Train		nominal	nominal
 Pittsburgh “The T”		nominal	nominal
 Las Vegas Metropolitan Area Express (MAX)	Below Basic	nominal	nominal
 Pittsburgh West Busway	Basic BRT	nominal	nominal
 Pittsburgh South Busway	Basic BRT	nominal	nominal

 Bus Rapid Transit  Bus  Streetcar  Light Rail Transit  BRT Standard Gold  BRT Standard Silver  BRT Standard Bronze

Then, we examined how well the factors described in Chapters 1, 2, and 3 correlated with these different TOD impacts. What emerges is a reasonably clear rank of the most important factors that influenced the level of TOD impact in each corridor, although there were not enough corridors surveyed to fully weigh the relative importance of each factor.

In Chapter 1, we scored each corridor using *The BRT Standard*. As discussed, we used *The BRT Standard* to score LRT and streetcars as well as BRT, as most of the characteristics that make a great BRT also make great LRT and streetcars.

In Chapter 2, we assigned each corridor a value for development potential (Limited, Emerging, or Strong), based on the real estate market strength of the majority of the land through which the corridor passes. Specific data on this is difficult to collect, so we used the following rules: “Limited” land markets are those where the transit line passes predominantly through land that is not easily developed, either because it is already built up, is institutional land, is adjacent to a highway or active rail line, is topographically difficult to develop, is divided into small parcels with confused title deeds, is extremely contaminated, or is blighted with no clear economic ‘anchor’ nearby. “Emerging” land markets are those in which the transit line passes through areas where land is available for redevelopment, perhaps currently blighted but adjacent to an economic ‘anchor,’ and hence is likely to redevelop with some government intervention. “Strong” land markets tend to be in or adjacent to downtowns, where land is available for development, and where other natural or historical features such as waterfronts or historical buildings make the land attractive to developers.



































In Chapter 3, we assigned each corridor a value for government TOD support (Weak, Moderate, or Strong) based on the degree to which the government intervened in order to promote TOD. As described, Weak support indicates that the government did almost nothing to promote TOD. Support was classified as Moderate when the government made some effort to promote development at a few sites through rezoning, investing into related infrastructure, environmental cleanup, land assembly, or promotional activities. Strong government support occurred when governments used their full powers to promote TOD along significant parts of the transit corridor.

The initial analysis showed that, of the factors we examined, the level of government TOD investment was linked most directly to TOD impacts. All transit corridors with Weak government TOD support had no TOD investment, all transit corridors with Moderate government TOD support had Moderate TOD investment; and all transit corridors with Strong government TOD support had Strong TOD investment.

The second most important factor was the development potential of the land through which the corridor passed. Within each category of government TOD support (Weak, Moderate, or Strong), most of the variance in TOD outcomes between the corridors is explained by the corridor-specific real estate market value of the land.

Our analysis found no correlation between the type of transit investment and the level of TOD investment. LRTs, BRTs, and streetcars all led to similar TOD investment outcomes under similar conditions. Three out of the six bronze or better BRT corridors stimulated more than \$1 billion in development, and Pittsburgh's MLK Jr. East Busway BRT came close at \$903 million. Similarly, three out of the seven bronze or better LRT corridors stimulated more than \$1 billion in development, and Charlotte's Lynx LRT came close at \$810 million. This gives us an initial indication that both BRT and LRT are capable of stimulating development. Cleveland's HealthLine BRT and Portland's MAX Blue Line LRT, the only two silver-standard corridors in the US, stimulated the most overall development.

The quality of the transit system investment matters, but only marginally. The very strong TOD impacts in both the silver-standard Cleveland HealthLine BRT and the silver-standard Blue Line LRT (Emerging land markets with Strong government TOD support) outperformed the TOD impacts of the below-basic BRT systems in Strong land markets with Strong government support (Kansas City Main Street MAX, Seattle SLU Streetcar, Portland Streetcar). This is the only clear indication that a higher-quality transit investment helped leverage more TOD impacts.

CORRIDOR	BRT STANDARD	LAND POTENTIAL	GOVERNMENT TOD SUPPORT	TOTAL TOD INVESTMENT (IN MILLIONS)	DEVELOPMENT PER TRANSIT DOLLAR (IN MILLIONS)
STRONG					
 Cleveland HealthLine		Emerging	Strong	\$5,800	\$114.54
 Kansas City Main Street Metro Area Express (MAX)	Below Basic	Strong	Strong	\$5,200	\$101.96
 Seattle South Lake Union (SLU) Streetcar	Below Basic	Strong	Strong	\$3,000	\$53.57
 Portland Streetcar	Below Basic	Strong	Strong	\$4,500	\$41.48
 Portland MAX Blue Line		Emerging	Strong	\$6,600	\$3.74
MODERATE					
 Las Vegas Strip & Downtown Express (SDX)		Strong	Moderate	\$2,000	\$42.28
 Boston Washington Street Silver Line	Below Basic	Emerging	Moderate	\$650	\$20.97
 Denver Central Corridor		Strong	Moderate	\$2,550	\$14.88
 Eugene Emerald Express Green Line (EmX)		Emerging	Moderate	\$100	\$3.96
 Pittsburgh Martin Luther King, Jr. East Busway		Emerging	Moderate	\$903	\$3.59
 Phoenix Metro		Emerging	Moderate	\$2,820	\$1.99
 Ottawa Transitway		Emerging	Moderate	\$1,000	\$1.71
 Charlotte Lynx		Emerging	Moderate	\$810	\$1.66
 Boston Waterfront Silver Line	Below Basic	Strong	Moderate	\$1,000	\$1.39
 Los Angeles Orange Line		Emerging	Moderate	\$300	\$0.83
 Denver Southwest Corridor		Limited	Moderate	\$160	\$0.71
WEAK					
 Ottawa O-Train		Limited	Weak	nominal	nominal
 Pittsburgh "The T"		Limited	Weak	nominal	nominal
 Las Vegas Metropolitan Area Express (MAX)	Below Basic	Limited	Weak	nominal	nominal
 Pittsburgh West Busway	Basic BRT	Limited	Weak	nominal	nominal
 Pittsburgh South Busway	Basic BRT	Limited	Weak	nominal	nominal

 Bus Rapid Transit
  Bus
  Streetcar
  Light Rail Transit
  BRT Standard Gold
  BRT Standard Silver
  BRT Standard Bronze



Eugene's EmX has leveraged \$100 million in development in a small city of 400,000 people.

FLICKR BY FUNCTORUSER

Other Factors Affecting TOD

We also looked at two other variables that had some influence on TOD investments in a few cases: the system's age, and the number of riders per mile.

YEARS OPEN

It may take a few years for a transit investment to induce changes in land use. We therefore looked at the number of years each system had been open. The older systems have had more time for their successful TOD investments to emerge. This means that the full TOD investments of the younger systems are probably understated. However, this did not significantly alter any of the other conclusions, as the impact of system age seemed heavily outweighed by the level of government intervention and the quality of the land served by the corridor.

RIDERS PER MILE

Systems serving more passengers should have stronger TOD impacts. More passengers spread out over a long system seemed less likely to have a TOD impact than systems where ridership was concentrated, so we decided to control for length by comparing riders per mile. On a per-mile basis, most of the systems — regardless of whether they are BRT, LRT, or streetcar — had surprisingly similar levels of ridership. As such, although Riders/Mile is probably a factor, this didn't explain much of the difference in TOD outcomes.

Table 12. TOD investments of the corridors studied have little correlation to their years open and riders per mile.

	CORRIDOR	YEARS OPEN	RIDERS PER MILE	TOTAL TOD INVESTMENT (MILLIONS)
LRT	Portland MAX Blue Line	26	2,011	\$6,600
BRT	Cleveland HealthLine	5	2,225	\$5,800
BUS	Kansas City Main Street Metro Area Express (MAX)	8	450	\$5,200
SC	Portland Streetcar	12	2,850	\$4,500
SC	Seattle South Lake Union (SLU) Streetcar	6	3,000	\$3,000
LRT	Phoenix Metro	5	2,089	\$2,821
LRT	Denver Central Corridor	19	11,845	\$2,550
BRT	Las Vegas Strip & Downtown Express (SDX)	3	6,716	\$2,000
BRT	Ottawa Transitway	30	12,842	\$1,000
BUS	Boston Waterfront Silver Line	9	1,528	\$1,000
BRT	Pittsburgh Martin Luther King, Jr. East Busway	30	2,637	\$903
LRT	Charlotte Lynx	6	1,505	\$810
BUS	Boston Washington Street Silver Line	9	8,376	\$650
BRT	Los Angeles Orange Line	8	2,324	\$300
LRT	Denver Southwest Corridor	13	2,039	\$160
BRT	Eugene Emerald Express Green Line (EmX)	6	2,500	\$100
BUS	Las Vegas Metropolitan Area Express (MAX)	9	986	nominal
LRT	Ottawa O-Train	12	1,800	nominal
LRT	Pittsburgh "The T"	29	1,088	nominal
BRT	Pittsburgh West Busway	13	1,650	nominal
BRT	Pittsburgh South Busway	36	2,153	nominal

BRT Bus Rapid Transit BUS Bus SC Streetcar LRT Light Rail Transit

Corridors with Weak TOD Impacts

All of the transit corridors with Weak TOD impacts had the following two characteristics:

- Limited land development potential
- Weak government TOD support

If land potential is Limited and government TOD support is Weak (Ottawa O-Train, Pittsburgh “T” LRT, Las Vegas MAX, and Pittsburgh West Busway and South Busway BRTs), there will be almost no TOD impact regardless of the type or quality of the transit investment. This does not mean that it is a poor transit corridor — it may serve many passengers well — but rather that it just did not stimulate development.

While the combination of Limited land development potential and Weak government TOD support unsurprisingly results in weak TOD investment, it can also be postulated governments do not tend to put much effort into redevelopment where the land has limited development potential. Lack of government TOD support tends to go hand in hand with Limited land development potential.

Classifications

BRT Standard



GOLD



SILVER



BRONZE



BASIC BRT



BELOW BASIC

Land Potential



LIMITED LAND POTENTIAL



EMERGING LAND POTENTIAL



STRONG LAND POTENTIAL

Government TOD Support



WEAK GOVERNMENT
TOD SUPPORT



MODERATE GOVERNMENT
TOD SUPPORT



STRONG GOVERNMENT
TOD SUPPORT

The Las Vegas MAX bus runs through the city of North Las Vegas and terminates right before the downtown of the City of Las Vegas.
ITDP



Las Vegas Metropolitan Area Express (MAX) bus



The Las Vegas MAX is a bus improvement project that has been labeled BRT by project proponents but that scored below basic according to The BRT Standard. It lacks most of the essential elements of BRT — most critically a median-aligned dedicated lane; its bus shelters are weather-exposed and unsecured, and it runs at low frequencies. The Las Vegas MAX corridor does not run through downtown Las Vegas; instead, it runs north of the city through a low-income area rife with vacant lots. At the same time, downtown Las

Vegas is developing around the SDX BRT corridor. With little overall development occurring in the Greater Las Vegas area, most support for TOD is focused on downtown Las Vegas. For this reason, and because a below-basic bus line runs through land with limited development potential, the Las Vegas development community has not been catalyzed around the MAX corridor.

Pittsburgh's West and South Busways largely operate in a submerged former freight rail channel, surrounded by land difficult to develop.

FLICKR BY DEAREDWARD

Pittsburgh's West Busway and South Busway BRTs



Pittsburgh's West Busway and South Busway corridors both classify as basic BRT, but there has been limited government effort to stimulate TOD along them. Pittsburgh's urban redevelopment efforts have focused mainly on the city's waterfront and, more recently, around East Liberty Station on the MLK Jr. East Busway BRT, stimulated largely by active private sector and community initiatives. Pittsburgh is not a rapidly growing city to begin with, and the land through which these two basic-BRT corridors pass is also of Limited development potential. Both corridors are built on former freight rail lines; the land along them is largely divided into small parcels and is characterized by difficult topography, environmental contamination, or other problems.

Pittsburgh "The T" LRT



The Pittsburgh "The T" is an example of an LRT project that had weak TOD investment in terms of dollars spent. The quality of the LRT ranks as bronze, but the LRT passes through land with Limited development potential. Much of the land is either hilly, which is not conducive to development, or is already developed. As a result the government has provided little TOD support.

Ottawa O-Train



The Ottawa O-Train has also had no significant TOD impacts. Like Pittsburgh's "The T" LRT, it ranks bronze under The BRT Standard. With stronger government TOD support, it may have had development impacts, but the land through which it passes has Limited development potential. The corridor runs near a highway, past a university, and over a river — all of which contribute to its inability to stimulate development. As a result, the government has not put much effort into redeveloping this corridor.



Ottawa's O-train operates on a former freight rail track west of Ottawa's city center.

FLICKR BY HALFFRISIAN

Corridors with Moderate TOD Impacts

Our analysis shows that all of the corridors in the Moderate TOD investment category (Eugene EmX BRT, Denver Southwest Corridor LRT, Los Angeles Orange Line BRT, and Boston Washington Street Silver Line) received Moderate government TOD support. Furthermore, the variance between corridors in this category can be explained almost entirely by the development potential of the land through which the transit corridor passes.



Denver's Southwest Corridor LRT's main development impact is CityCenter Englewood, which is on a site that was home to the largest covered shopping center west of the Mississippi River.

FLICKR BY GUANARTEME

Denver Southwest Corridor LRT



The Denver Southwest Corridor LRT is a bronze-standard LRT corridor that runs to the southwest of downtown Denver. It connects to the Central Corridor LRT that runs directly through downtown, so some of the development to which it may have contributed is captured in the Denver Central Corridor LRT figures. The Southwest LRT corridor has Limited land development potential due in large part to its position alongside an active freight rail line, with CityCenter Englewood, and Downtown Littleton being notable exceptions.⁶⁹

The parts of the corridor that are not industrial have been identified as “areas of change”⁷⁰ and zoned for mixed-use and TOD urban design elements. These changes are relatively recent, however. So far, only targeted efforts in the Englewood station area have led to development. There, the city purchased the site of a dilapidated former shopping mall, and, together with Denver's Regional Transit District and some private developers, provided funds to help clear the site of abandoned and dilapidated buildings.⁷¹

Eugene's EmX Green Line's moderate development impact have largely been due to its proximity to the main campus of the University of Oregon.

FLICKR BY WOLFRAM BURNER



Eugene Emerald Express Green Line (EmX) BRT



Along Eugene's EmX Green Line BRT corridor, development has been largely concentrated around the segment near the University of Oregon campus. Much of the development has been in the form of hotels and apartment buildings that cater to the student population. However, some of the new development has occurred in Eugene's downtown. The City of Eugene provided TOD support by establishing a vision in their comprehensive plan, implementing a TOD overlay zone, and establishing downtown as an urban renewal district.⁷² Eugene also established a Downtown Revitalization Loan Program, which provides low-interest loans to developers building in the downtown area.⁷³ Downtown is also included in the Vertical Housing Development Zone, which provides a 10-year property tax exemption to new construction that includes ground-floor retail and residential above it, the amount of which depends on the number of floors of residential.⁷⁴



Although station area plans for Los Angeles' Orange Line BRT haven't been adopted, development has still occurred at the Warner Center station, where the city has focused its efforts.

FLICKR BY METRO TRANSPORTATION LIBRARY AND ARCHIVE

Los Angeles Orange Line BRT



The Los Angeles Orange Line BRT qualifies as bronze because it has its own fully dedicated right-of-way, employs off-board fare collection, operates at high frequencies, and includes many other important elements of bronze-standard BRT. The majority of the development that has occurred along the Orange Line is in North Hollywood, where the BRT joins the Metro Red Line subway station that connects to downtown Los Angeles. North Hollywood was identified as a redevelopment project area in 1979. Over the years, Metro has acquired much of the land in the station area, and as the owner it works with developers to redevelop sites there.⁷⁵ For this reason, TOD investment along the Orange Line BRT can be attributed to the Red Line subway as much as to the BRT. More importantly, it can be attributed to the government support provided for development.

LA Metro, the Southern California Association of Governments (SCAG), and the Los Angeles Department of City Planning have already identified six station areas along the Orange Line BRT that have the potential to develop

further — Warner Center, Canoga, De Soto, Sepulveda, Van Nuys, and North Hollywood.⁷⁶ Indeed, SCAG, US Department of Transportation, and Caltrans have supported a vision for TOD around certain Orange Line stations.⁷⁷ But so far, development around these stations has proven difficult due to lack of community support for densification. Like elsewhere in Los Angeles, community control of zoning and deep resistance to increased density at the community level have made TOD difficult to implement along the Orange Line as well as along the Blue Line LRT to Long Beach, with the exception of downtown Long Beach. Overcoming these challenges would likely go a long way toward moving the Orange Line corridor from the Limited TOD impacts category to the Moderate or even Strong category. Upgrading the bronze-standard BRT to silver or gold would help relieve some of the current capacity constraints and could also help further improve the image of the Orange Line corridor as a high-quality transit corridor ripe for TOD.

Boston Washington Street Silver Line bus



The Boston Washington Street Silver Line, which ranks below basic under The BRT Standard, has one of the highest demands of all the bus corridors in Boston. With a moderate amount of support from the Boston Redevelopment Authority (BRA), between 2002 (the year it opened) and 2006, more than \$650 million was invested in real estate in all three neighborhoods served by the Washington Street Silver Line: Dudley Square, the South End, and Chinatown/Downtown. These developments included new construction on vacant lots, the rehabilitation of historic buildings, and enhancements to retail. New zoning along the corridor that regulated for transit-friendly improvements — including entrances on the sidewalk, pedestrian-scale uses, and limited parking behind or below the new structures — helped to ensure that new development was transit-oriented. The

BRA owned a significant amount of property along Washington Street and sold parcels to developers, reducing the price in exchange for commitments to build affordable housing. The city also renovated two major public properties on Washington Street.

Most local experts attribute the redevelopment along Washington Street primarily to the removal of a blight-inducing, now defunct elevated rail line along Washington Street, as well as to the successful business improvement districts and area-wide rezoning, rather than to the transit investment. The impacts were quite modest, however, mainly because this is already a densely built part of the city, and there is not a great deal of additional land available for development, so the government did not do much to promote TOD.



After an elevated rail line that had previously prevented development along Boston's Washington Street was torn down in 1987, development began to occur in the area.

FLICKR BY MIT-LIBRARIES

Charlotte Lynx LRT



Charlotte's LRT — called the Lynx — opened in 2007, with 9.1 miles and 15 stations serving the central business district, a neighborhood known as South End, and southern parts of the city. Since opening five years ago the Lynx has leveraged over \$800 million in transit-oriented development along the corridor, primarily due to the city's aggressive approach to planning for development around stations and outreach to developers. There were many station-area plans and large-scale visioning exercises that provided a vision to developers. In addition, the Lynx follows a former freight rail and connects downtown to South End, an old industrial section of town close to downtown and flanked by middle-income and upscale neighborhoods. Most of the development has been concentrated in this area because there was ample attractive land. Another key component of Charlotte's success was the relocation of Bank of America's global headquarters to downtown Charlotte. Charlotte is now the largest banking center outside of New York City, and a large number of young bankers have moved to Charlotte in the past few decades in search of downtown urban living.



Although actual development slowed during the 2009 recession, most of the parcels along the Lynx light rail had already been purchased by developers.

FLICKR BY JAMES WILLAMOR

The Phoenix Metro LRT's moderate development impacts are due to its operation through downtown Phoenix and into the university towns of Tempe and Mesa.

FLICKR BY DEAREDWARD



Phoenix Metro LRT



Development along Phoenix's Metro LRT has been mostly concentrated in the city of Tempe, with some development in Phoenix. The light rail operates from North Phoenix through downtown Tempe, the Arizona State University (ASU) campus, and into Mesa. The decision to run the LRT through the ASU campus was particularly influential, as there was ample land and a lot of student demand for housing and commercial uses.

Pittsburgh Martin Luther King, Jr. East Busway BRT



Pittsburgh's bronze-standard East Busway BRT connects to the edge of downtown Pittsburgh but does not maintain its dedicated lanes when it enters downtown. Built on a former freight rail line, most of the station areas are not easily developed either because they are already built up or because land ownership in the area is highly fragmented. Almost all of the new TOD investment is concentrated at the East Liberty station, where there were considerable public and private sector efforts to stimulate this redevelopment. The fact that this Emerging land market only began to develop once the government took a role indicates that government support is among the most critical factors in stimulating development. Three or four additional station areas, surrounded by surface park-and-ride lots, would have reasonable potential for redevelopment were the government to take the initiative to do so.

Boston Waterfront Silver Line bus



Boston's Waterfront Silver Line bus is a special case. Unique among the Moderate TOD impact corridors, the Waterfront Silver Line is below-basic BRT, yet it had Moderate government TOD support and serves a strong land market. For a very short section where the system passes through a new tunnel that connects the rapidly developing waterfront area to downtown Boston, it is a fully grade-separated underground corridor that is of a relatively higher quality than the rest of the corridor. However, even here it lacks at-level boarding and travels at fairly low speeds. After one mile, it exits the tunnel and enters mixed-traffic surface streets, at which point its operations are indistinguishable from those of a normal bus route. As a result, it is classified as a bus — not BRT — system for the entirety of the corridor. The corridor cost \$70 million per mile to construct, comparable to the most expensive LRT corridor (Phoenix). Most of the cost went into digging the new tunnel.

This new transit tunnel, together with Boston's Central Artery/Tunnel Project (the Big Dig), the costliest highway project in US history, made this otherwise difficult-to-reach waterfront much easier to access from downtown. This new transit access to the area helped convince the Boston Redevelopment Authority to up-zone the area. This up-zoning of a waterfront property adjacent to downtown — in addition to new parking restrictions to promote more transit-friendly development, and the marketing of this new area as the Seaport District — helped to leverage considerable TOD investment. Interviews with developers indicate that the zoning change was probably far more important to stimulating development than was the new transit link.



Las Vegas Strip & Downtown Express (SDX) BRT



The Las Vegas SDX is a fairly new corridor that opened at the bottom of a real estate cycle in 2009–2010. It nonetheless managed to leverage significant new investments. Though little is visible on the ground yet, the developments are all moving forward. The City of Las Vegas intervened to stimulate this development, though its zoning policy is extremely laissez-faire and allows development almost anywhere. There was plenty of land with development potential, and the corridor enters downtown Las Vegas. Because the developers wanted to secure LEED-Neighborhood Development certification, they were attracted to these downtown sites in part due to their proximity to public transit.

Denver's D, F and H LRT lines all converge on Denver's Central Corridor and have concentrated its development impacts.
FLICKR BY TRACKTWENTYNINE



Denver Central Corridor LRT



The TOD impacts of the Denver Central Corridor LRT consist almost entirely of downtown Denver investments that could be attributed to broader downtown revitalization efforts. This so-called corridor is actually just the downtown portion of a network of LRT lines, so attributing these impacts to a single LRT corridor exaggerates the TOD investment impacts of the downtown section at the expense of the remainder of the system. The 16th Street bus mall and a number of other downtown public investments are also located in downtown Denver. The city amended the zoning code downtown to be form-based and created a station-area typology that helps identify land-use mix, housing types, and the larger scale desired in its downtown.⁷⁸ Downtown Denver is also a BID, overseen by the Denver Downtown Partnership, a nonprofit that works with the city to plan, manage, and develop downtown Denver.⁷⁹ It is likely that TOD impacts in downtown Denver will increase further now that the city has adopted a comprehensive plan with transit-oriented zoning.

Corridors with Strong TOD Impacts

The analysis shows that all of the corridors in the Strong TOD Impacts category had Strong government TOD support and either Emerging or Strong land potential.

The only two transit corridors in our study that rate above bronze — the Cleveland HealthLine BRT and the Blue Line LRT — both fell into the Strong TOD Impacts category and were in Emerging land markets. The Blue Line LRT leveraged \$6.6 billion in new TOD investments, and the Cleveland HealthLine BRT leveraged \$5.8 billion, making them the two most successful transit investments in the country from a TOD perspective. Portland achieved this over a much longer time period and in a stronger economy than Cleveland did.

In the Strong TOD Impacts category, three corridors with below-basic-quality transit had Strong land development potential and Strong government TOD support: the Portland Streetcar, the Seattle SLU Streetcar, and the Kansas City Main Street MAX.

In each of these cases, local developers and development authorities did not feel that the transit investment was all that critical to the TOD impacts. Thus, we can conclude that if the land market is strong enough, and the government TOD efforts strong enough, a below-basic transit investment might suffice; but a higher-quality transit investment could have even greater impacts.



Cleveland HealthLine BRT



Like Portland's MAX Blue Line LRT, Cleveland's non-transit efforts were critical to its development success. Over \$200 million in overall public funds were invested in Cleveland, only \$50 million of which were for the transit system. If forgivable loans and other financial support channeled into the corridor were included, the level of public support for this project would be considerably greater. That Cleveland was able to do this despite an overall weak real estate market is remarkable. As such, Cleveland is the best practice for TOD from surface transportation investments. A full explanation of the Cleveland success follows in Chapter 5.



Portland's MAX Blue Line LRT is 33 miles long and has leveraged \$6.6 billion in TOD investment.
FLICKR BY ALEXABBOUD

Portland MAX Blue Line LRT



Much of the TOD impact of the Portland MAX Blue Line LRT can be attributed to non-transit factors. The 33-mile MAX Blue Line LRT, which stimulated development in previously under-utilized areas of Portland like the Lloyd District, benefited from Portland's progressive transportation and land-use policies and its unique regional governance system, which played a significant role in creating compact urban development and land-use patterns. Overlay districts, tax abatement programs, parking restrictions, station-area planning, and other public investments have all been used effectively to leverage this impressive TOD investment.



Seattle South Lake Union (SLU) Streetcar



The Seattle SLU Streetcar played an important if indirect role in Seattle's spectacular new South Lake Union redevelopment. Though the Streetcar corridor is only 1.3 miles long and carries relatively few passengers (3,000 per day) at low frequencies (every 15 minutes), and most of the transit trips in the area are served by Seattle's regular bus system, the Streetcar investment attracted a lot of media attention to the project, which helped considerably to generate investor enthusiasm. Large plots of government land adjacent to a waterfront not far from downtown Seattle were ripe for redevelopment. This land had been held in reserve for a planned highway that was never built, and the government finally sold the land to the developer, Vulcan, which is owned by Microsoft cofounder Paul Allen.

The government also invested heavily in a new boulevard connection to the interstate highway system, which made the area far more accessible by private car. Further, it invested in a new power substation that is controlled by the municipality. Though the Streetcar itself cost only about \$56 million, more than \$200 million in additional complementary government investments were made in the area. If all of the TOD investments in South Lake Union were attributed to the Streetcar it would rank as the second-most successful TOD project in the US after Cleveland's HealthLine BRT, leveraging a total of \$3 billion, or \$53.57 for every dollar of TOD investments.



Portland's Pearl District has seen over \$4.5 billion in development since the Streetcar was implemented.
FLICKR VIA NEITECH.

Portland Streetcar



Portland's Streetcar is a similar case. Though only four miles long, it was built in the popular Pearl District of downtown Portland, a formerly an underused industrial area with vacant lots and dilapidated buildings. A developer's acquisition of a 34-acre plot was the catalyst for planning and investment. In 1998, a development agreement was formed that linked housing density to public improvements, specifically transit. A master plan was completed in 2001, which focused on increasing FAR and mixed-use zoning and encouraging variable building heights to allow for innovative design. Housing density in the area was increased under an agreement to construct a streetcar, improve the streetscape, and help the city meet affordable housing goals. Surface parking lots along the streetcar line were prohibited, and active ground floors were required along the corridor. The Streetcar was instrumental in unlocking development in the Pearl District, and its 11,400 daily trips indicate that it does serve a significant function by improving transit access to the area. Its main benefit over the bus routes that serve the Pearl District — which have similar passenger volumes and speeds — is that it provides an attractive addition to the streetscape.

Kansas City Main Street Metro Area Express (MAX) bus



The Kansas City Main Street MAX has low ridership and lacks most of the attributes of BRT. The MAX employs off-board fare collection but operates in mixed traffic lanes and at low frequencies. It lacks dedicated and enforced right-of-way and platform-level boarding. Despite these shortcomings, however, downtown Kansas City, through which the majority of the Main Street MAX service runs, has experienced significant development over the past ten years, primarily due to the emerging downtown land market and the strong government interventions that have encouraged land development downtown. Several governmental and non-governmental organizations in Kansas City have helped to bring about increased TOD planning and implementation. The city also adopted the Greater Downtown Area Plan, which focuses on encouraging transit- and pedestrian-oriented development. Its zoning code, amended in 2011, has Special Review Overlay and Urban Redevelopment Overlay districts that accommodate varying types of urban design to help ensure redevelopment. The downtown MAX segment was not assigned any significant zoning advantage, but the southern section of the corridor has a Special Review Overlay, although no significant amount of development has been seen there.

Kansas City created strong institutions – both public and private – and financing mechanisms to stimulate development in its downtown, and these measures generally worked. When the Ballet Association of Kansas City needed a new location, it looked to downtown Kansas City. There, a ninety-year-old, environmentally contaminated power plant that had been abandoned for thirty-five years had the perfect “bones” for redevelopment into a premier dance facility. The \$32 million redevelopment project included brownfield tax credits, Historic Preservation Tax Credits, and private financing.⁸⁰



**Downtown Kansas City
has experienced a
rejuvenation as more
resources and support
have appeared.**

FLICKR BY OUT.OF.FOCUS



Comparing TOD Impacts of BRT, LRT, and Streetcars

The typologies described above begin to give some basis for comparing TOD impacts between transit systems implemented under similar circumstances.

The analysis revealed no case in which one mode of transit—BRT, LRT, or streetcar—was more instrumental in stimulating development than another. In fact, under comparable conditions (similar land potential, similar levels of government TOD support), the type of the transit investment did not make any difference in the level of TOD impact.

All of the three corridors we studied that had both Strong land development potential and Strong government support — Kansas City Main Street MAX, Portland Streetcar, and Seattle SLU Streetcar — leveraged several billion dollars each in development around lower-quality transit investments. However, in cases where either the land potential or the level of government TOD support was weaker, the transit investment seemed to play a larger role. So, while a city may not need to build a bronze or better transit project in a Strong land market where it is also providing Strong TOD support, a higher-quality transit investment will provide better long-term mobility benefits to the people who will ultimately live and work on the corridor.

The quality of the transit investment made some difference in the transit system's impact on development, but the difference was marginal.

However, there were significant differences in the cost effectiveness of the transit investment at leveraging TOD between the modes. The following groupings of level of government support and level of land development potential make it possible to clearly see these differences:



Moderate government support and Emerging land development potential

In these corridors, one dollar of bronze or better BRT transit investment has led to TOD investment from \$0.83 (Los Angeles) to \$3.99 (Eugene).⁸¹ One dollar of bronze or better LRT investment led to TOD investment ranging from \$1.66 (Charlotte) to \$1.99 (Phoenix).



Moderate government support and Strong land development potential:

On transit corridors with moderate government TOD support and strong land potential — Las Vegas SDX BRT, Boston Silver Line Waterfront bus, and Denver Central Corridor LRT — there were Moderate TOD Impacts', though it was difficult to attribute these impacts primarily to the transit investment. Ignoring that, one dollar of BRT investment led to \$42.28 (Las Vegas SDX) in TOD investment while a dollar of LRT led to only \$14.88 of TOD investment under similar conditions.⁸²



Strong government support and Emerging land development potential:

In these corridors, a silver LRT (Portland MAX Blue Line LRT) leveraged, per dollar of transit investment, \$3.74 of TOD. A silver BRT (Cleveland HealthLine BRT), however, under the same conditions, leveraged, per dollar of transit investment, \$114.54 of TOD.



Strong government support and Strong land development potential

In these corridors, a range of \$41.48 (Portland Streetcar) to \$53.57 (Seattle SLU Streetcar) of TOD was leveraged per dollar of transit investment. For below basic transit (Kansas City Main Street MAX) in a Strong land development potential with Strong government support, \$101.96 of TOD was leveraged.

In summary, in corridors with Emerging land development potential and Moderate government TOD support, BRT was two to three times as cost-effective as LRT at leveraging TOD investments. When government TOD support was Strong, BRT was as much as thirty times more cost effective than LRT.

Because the total investment values in BRT and LRT were comparable, most of this difference is a function of the difference in cost between BRT and LRT infrastructure. While the cost of BRT and LRT systems varies widely, on average, BRT systems cost considerably less than half as much as LRT systems on equivalent corridors. In our study, the BRT with the highest quality rating and the greatest TOD impact — Cleveland HealthLine BRT — cost fourteen times less than what an LRT was projected to have cost on the same corridor.⁸³

As a result, because silver- and bronze-standard BRT corridors leveraged as much or more TOD investment as did similarly rated LRT corridors with similar levels of government support, they leveraged far more total TOD investment per dollar of transit investment.

A NOTE ON STREETCARS

A December 2012 report by Reconnecting America on transit projects in midsize US cities corroborated the view that most streetcar projects were built solely for the purpose of boosting the economic value of existing land-use projects. LRT and BRT projects, on the other hand, were generally built with the dual goals of mobility and economic development.⁸⁴ Thus, streetcars, while often successful at attracting economic development, do not generally serve as important transit links. If cities want to adequately serve the transportation needs of the populations relocating into new TODs, they must provide transit options that can connect these areas to other destinations and travel at reasonable speeds.

CHAPTER 5

Two Case Studies:

How Cleveland and Pittsburgh successfully captured development around their BRTs

After nearly a half century of population loss and urban blight in many of the former industrial cities of the US, the last decade has brought about a change. Many cities are now striving to reurbanize, and some are beginning to find success. Cities with few public dollars to invest in transit are discovering BRT and are harnessing the available tools to develop around it.

Below, we present case studies of two cities—Cleveland and Pittsburgh—that were able to assemble the institutions, planning, financing, and marketing tools necessary to attract development around one or more of their BRT stations. The case studies provide a start-to-finish story of how these factors all came together. Moreover, both cities have had some degree of success in including affordable housing in their new developments. How this was accomplished, and what were some of the challenges these cities faced in doing so, are discussed here as well.

Reviving Millionaire's Row:

Cleveland's HealthLine BRT system

Cleveland's silver-standard BRT corridor, the HealthLine, leveraged more transit-oriented development than any other surface transit investment in the US⁸⁵, with the exception of the Portland MAX Blue Line LRT. Per dollar of investment, it had the greatest TOD impact of any surface transit system we studied. The HealthLine cost fourteen times less than what a light rail line in the same corridor was estimated to have cost, yet within four years after it opened it had leveraged \$5.8 billion in new TOD, despite an extremely depressed regional economy. With only \$50 million invested in vehicles, stations, and platforms, and another \$150 million invested in street improvements and infrastructure in the corridor, the project leveraged \$29 of new investment per dollar invested in public infrastructure, and \$118 of new investment per dollar invested in transit — by far the highest in the US.

This was a well-chosen corridor, as it connected the two most important employment centers in Cleveland: downtown and University Circle. Euclid Avenue was the most popular bus route in the Greater Cleveland Regional Transit Authority's (GCRTA) system, so the HealthLine delivered the maximum level of mobility benefits to the city's predominantly low-income bus riders. It also helped revitalize the two most important employment centers in Cleveland and the struggling district between them known as MidTown.

The vast majority of the TOD investment went toward offices and retail, institutional (universities and hospitals), and cultural buildings. These new investments generated employment and shored up the city's tax base during the economic crisis in 2008. Along with the city's frugal fiscal policies, these investments allowed the city to minimize layoffs and the GCRTA to minimize cuts in bus services similar to those affecting neighboring Chicago, Detroit, and other cities. Because there are few residential properties immediately adjacent to the corridor, and the overall weak economy and population loss have depressed rents citywide, the project had no adverse impact on the rents paid by low-income residents.

The construction of Cleveland's HealthLine included not only the transit system but street improvements including burying of power lines, fiber-optic cables and landscaping.

LAUREN PARSELLS



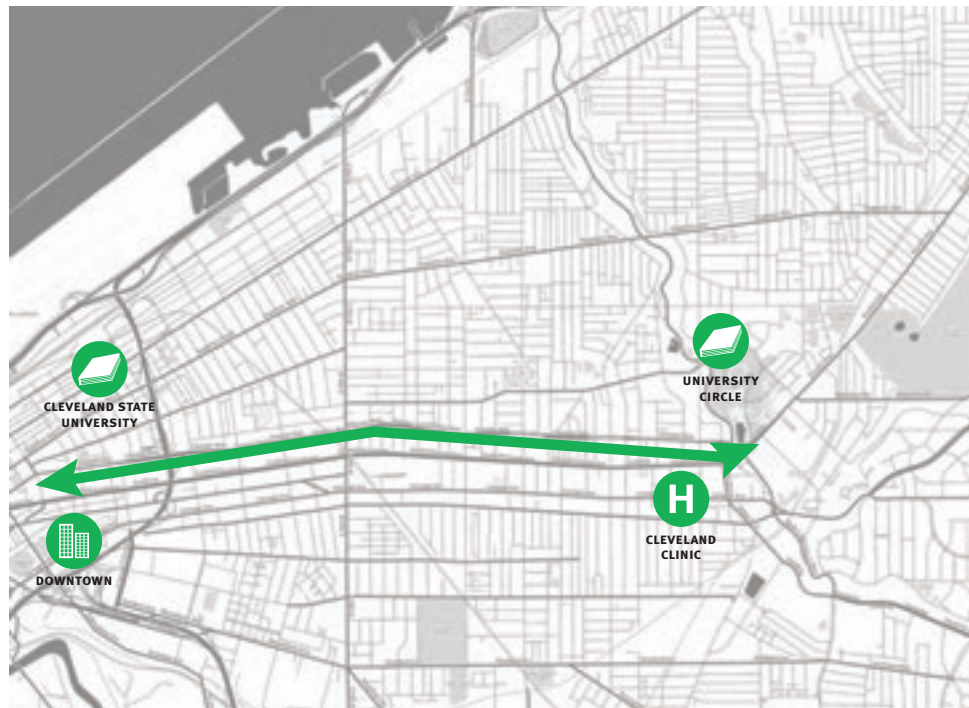
Background

Cleveland's fortunes have paralleled the rise and fall of the US manufacturing industry. From the second half of the nineteenth century until the middle of the twentieth century, Cleveland prospered, growing from a population of 17,000 in 1850 to 914,808 in 1950.⁸⁶ Manufacturing jobs peaked just before World War II.⁸⁷ From the second half of the nineteenth century into the 1950s, Cleveland's Euclid Avenue was the most important street in the city. Referred to as Millionaire's Row, or Prosperity Street, Euclid Avenue was often compared to New York's Fifth Avenue. The mansions of corporate giants like John D. Rockefeller (Standard Oil) and Andrew Brush (General Electric) lined Euclid Avenue, and as the economy boomed, these were replaced by leading department stores.

By the 1950s, however, many middle- and upper-income residents began moving to the suburbs, taking the city's tax base with them. Municipal services began to decline, and areas around downtown Cleveland experienced blight and depopulation. Even in these early days of Cleveland's urban degradation, business leaders were concerned and began developing plans to revive the urban core.

The city's fortunes worsened in the 1960s, with the Hough Riots in 1966 and the Glenville Shootout in 1968 hastening the flight of the middle class to suburban areas. Cleveland continued to lose manufacturing jobs. As a Brookings Institution report notes, "Between 1980 and 2005, Cleveland lost about 110,300 manufacturing jobs, or 42.5 percent of its manufacturing employment."⁸⁸ With the bottom falling out of the economy, in 1978 Cleveland was the first US city since the Great Depression to default on its loans.

By the 1970s, but particularly after 1979, when George Voinovich became mayor, the strategy known as Dual Hub began to develop. The city believed that the only way to revive itself was to connect its two urban hubs with a mass transit link along Euclid Avenue. Downtown, which was still the commercial center of Cleveland, stood on the western end of the Euclid Avenue corridor. University Circle, a community that was home to Cleveland Clinic, Case Western Reserve University, and the University Hospitals/Case Medical Center,



occupied the eastern end and provided jobs for thirty thousand people. The idea was that if the city could link these dual hubs with a high-quality transit connection, they would become more vital, and the blighted middle would begin to fill in.

The stretch of land between the two hubs, known as MidTown, suffered from abandonment. Historically a light industrial area, it was hard hit by the general downturn in manufacturing. Only a few businesses remained there, outnumbered by vacant and dilapidated buildings. The area became the focus of many of the conversations surrounding the revitalization of Cleveland.

The city's early thinking was to build a rail connection between the two hubs. The city initially started planning a subway line under Euclid Avenue in the 1950s, but full funding for a subway could never be found. Planning continued throughout the 1980s and 1990s to connect the Dual Hubs with a series of rail alternatives. The proposal led by the City Planning Department was for a full-featured corridor with bike lanes, street furniture, and other amenities. The cost of the locally preferred alternative — light rail — continued to increase, eventually reaching \$800 million. During this time, Cleveland's population and tax base continued to decline. The population fell from a peak of more than 900,000 in the early 1950s to only 505,616 by 1990.⁸⁹ As a result, the costly light rail proposal simply did not prove viable, and Cleveland's fortunes slipped even further. Though Cleveland has continued to lose residents (the population was 396,166 in 2010), the pace of decline has slowed considerably in the past two decades.

The Dual Hub strategy linked University Circle, home to Cleveland Clinic and Case Western, with downtown Cleveland.



Vacant buildings and lots dominate the landscape of the MidTown neighborhood.
LAUREN PARSELLS



MIDTOWN DISTRICT

HISTORY

Midtown is the home of the historic Masonic Temple, world famous Agora Theatre, Ohio's only Chinatown and the historic Dunham Tavern Museum. Stroll through quiet residential streets to capture the unique past and present as Midtown continues to peak as one of Cleveland's renaissance districts.



The HealthLine BRT System

As early as 1995, the Greater Cleveland Regional Transport Authority (GCRTA) began studying bus rapid transit. In 1998, George Voinovich, who had been serving as Ohio's governor for eight years, visited Curitiba, Brazil; while he was there, he witnessed the world's first BRT system. Having never heard of this mass transit technology, Voinovich was impressed. He organized a second visit, this time including business leaders and staff from the GCRTA. This delegation became convinced that a rubber-tire system, as attractive as rail but with a much lower cost, was to be the new path forward for Cleveland's Dual Hub corridor. The Northeast Ohio Areawide Coordinating Agency (NOACA), the Metropolitan Planning Organization for five counties in northeastern Ohio, then developed the project details in 1999 and held a series of public hearings.

A standard bus route, the number 6, already operated on Euclid Avenue and was the most popular bus route in Cleveland, but the average speed was a mere 9.3 miles per hour.⁹⁰ This made it an excellent candidate for conversion into BRT, and the Federal Transit Administration (FTA)

agreed. With the help of Voinovich, who was by then an Ohio senator (he had been elected as a Republican to the US Senate in 1998), GCRTA secured a New Starts grant from the FTA of \$82 million in October 2004.⁹¹

GCRTA maintained the earlier vision of a full-featured corridor, so the project was more than just BRT — along the 7.1-mile corridor, which included a 2.3-mile transit zone, the authority also proposed burying power lines, installing fiber-optic telecommunications cables, rebuilding ancient sewer and water lines, and adding street level amenities such as improved sidewalks, bicycle lanes, and public art. The project cost a total of \$200 million, which included roughly \$50 million for the BRT vehicles, stations, and platforms, and \$150 million for the infrastructure and street-level enhancements. Of the total cost, \$82 million was covered by the New Starts grant; \$75 million from the State of Ohio; \$21 million from GCRTA; \$10 million from NOACA; and \$8 million from the City of Cleveland. A variety of other state and local funds made up the remaining \$3 million.⁹²



Cleveland's HealthLine BRT cost roughly \$50 million for the vehicles, stations, and platforms, and \$150 million for the infrastructure and street-level enhancements.

ITDP

Iconic stations beautify the street in Cleveland and draw people's attention to the BRT.

ITDP



The Cleveland HealthLine is the only BRT corridor in the US that is ranked silver under The BRT Standard. It is one of only two BRTs in the US with platform-level boarding and central median stations. It also has off-board fare collection and 4.5 miles of dedicated center lanes from University Circle to downtown Cleveland, all of which are responsible for the increase in speed. Because the HealthLine was an upgrade from the number 6 bus, it reduced the number of stops along the corridor from over 100 to 36 — yet another reason for the speed increase. Frequencies were shortened to 2.1 minutes during the peak period, down from 6 minutes previously. Multiple bus routes use the BRT corridor, and mixed traffic is forbidden from turning across the busway at most intersections. Modern, iconic stations enhance the streetscape and provide a safer, more attractive waiting area for passengers. They also create a sense of permanence for those wishing to invest in or live along the corridor. These features and several others were the main reasons for the system's silver rating.

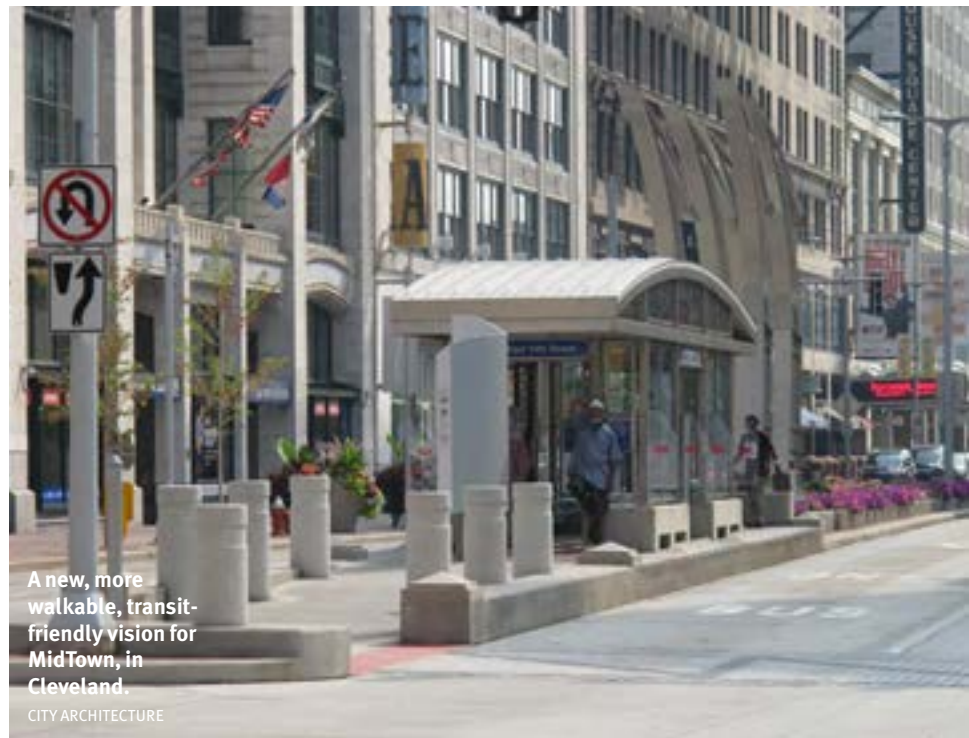
Ridership has increased by 67% since the HealthLine opened in October 2008: four years after opening, the system's average weekday ridership was 15,800. About 13% of the new passengers came from the nearby rail line, and a reasonable 18% were former automobile commuters. Speeds increased by 34%, from 9.3 mph, pre-BRT, to 12.5 mph. Finally, the use of cleaner, diesel-electric hybrid buses and the reduction in overall traffic cut particulate emissions in the corridor by 95%.

The HealthLine is perhaps the highest-quality, most cost-effective transit improvement in the US. Its silver rating under The BRT Standard is reflected in the corridor's high performance. Yet the city knew that a transit link on its own was not enough to transform Cleveland.

Community Development Corporations

As occurred in many declining US cities, Cleveland communities organized themselves to try and improve their neighborhoods in reaction to the racial strife and decline of urban services in the 1960s and 1970s. Many formed community development corporations (CDCs). CDCs were an initiative championed by the Ford Foundation through groups like LISC (Local Initiatives Support Corporation) and the Enterprise Foundation. Federal Community Development Block Grants were also used to fund the CDCs. These organizations and programs played a key role in stimulating urban revitalization throughout the country.

Today there are more than thirty CDCs in Cleveland alone.⁹³ MidTown Cleveland, Inc., formed in 1982, is one of the most successful. MidTown was created by a community of small businesses that had remained in the mostly blighted area between downtown and University Circle. Each business paid membership dues ranging from as little as \$250 to about \$43,000 per year to cover the cost of operations.⁹⁴ MidTown, Inc. was led largely by Mort Mandel of Premier Industrial, an auto parts distributor, who was joined by the owners of other neighborhood businesses, such as Central Cadillac and some local banks, and others. The main aim of this CDC was to attract businesses and development back to MidTown and retain the businesses already there. They did this through what they lovingly referred to as PPPs — “potholes, petunias, and prostitutes”: pressing municipal authorities to improve urban services, investing in street improvements, and encouraging the police to crack down on various illegal activities, particularly prostitution. Similar CDCs emerged in downtown Cleveland (now the Downtown Cleveland Alliance, or DCA) and in University Circle (University Circle, Inc., or UCI).



Municipal Planning and Zoning

As BRT plans developed for the Euclid Avenue corridor, so, too, did Midtown Cleveland, Inc.’s new master plan for MidTown: Beyond 2005: A Vision for MidTown Cleveland. The plan provided a vision for how MidTown would look and feel. It proposed a higher-density, mixed-use area focused on the pedestrian, with the BRT as the centerpiece. In 2005, the City Planning Commission unanimously adopted the plan.⁹⁵

The MidTown master plan also proposed changes to the zoning code. Previously, the overall zoning scheme for the city of Cleveland had also applied to MidTown. Cleveland has a pyramid form of zoning in which lighter use is permitted in an area zoned for heavy use, but not the other way around. For instance, industrial zones, which often have adverse noise or pollution impacts on surrounding properties, may allow lighter uses such as commercial and residential, but areas zoned for residential use must remain exclusively residential. So MidTown, which was zoned for industrial use, also permitted commercial and residential uses. This scheme, however, gave the planning authorities little control over the specific types of developments that went into the Euclid corridor. The zoning change, adopted into code in late 2005,⁹⁶ was proposed to ensure that any new development fostered a walkable, BRT-oriented urban environment.

The new code created a special zoning district, called MidTown Mixed Use District 1, which ran

from East 40th Street to East 79th Street. It was aggressive, with the following requirements for new construction:

- New buildings must have a minimum of three floors
- Buildings must be built to the street line
- Buildings must fill at least 80% of the lot width
- Most buildings must include ground level retail
- Parking minimums must be reduced by one-half, and parking maximums replacing the former minimums

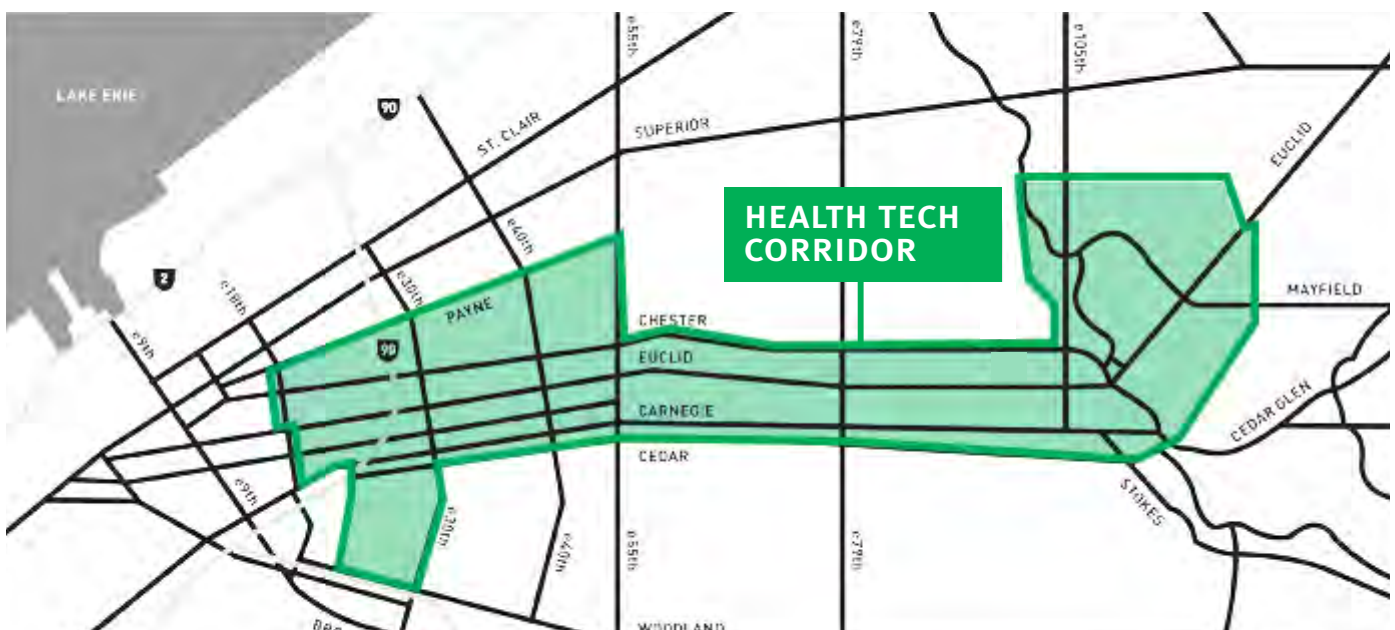
This was not as rigid as a form-based zoning code. Rather than dictating building forms the new code laid out the principles listed above, and then, by designating the Euclid corridor a “Design Review District,” it subjected all new developments to review by a board composed of architects and urban designers.

Such an aggressive change to its zoning posed something of a risk to MidTown, because

tightening the requirements for building in an already undesirable area could have made it that much more difficult to attract developers. Fortunately, however, concentrating development in the Euclid Avenue corridor did not require restricting development in other parts of the city, because the property market was so weak that there was relatively little new investment in Cleveland.

Though the MidTown master plan was created in the absence of a citywide comprehensive plan, in 2007 the City Planning Department did develop such a plan, Connecting Cleveland 2020, which emphasized the creation of the development corridor along Euclid Avenue and supported the concept of a transit-oriented, walkable MidTown.

In 2009, Cleveland Mayor Frank Jackson and the city’s Economic Development Department, together with MidTown, Inc., hired a consulting firm, AngelouEconomics, to create an economic development strategy for the MidTown section of the Euclid corridor. The firm’s study resulted in the idea of marketing MidTown as a “Health-Tech



Outline of the Health-Tech Corridor in Cleveland’s MidTown neighborhood.

CLEVELAND HEALTH TECH CORRIDOR WEBSITE



Corridor” (HTC). Because the Cleveland Clinic, the University hospitals, several medical centers, and universities with health-related research centers occupied the eastern end of the Euclid corridor, the HTC concept was envisioned to harness these institutions as health-based anchors to attract additional health-related development. The study cost \$120,000 and was funded by the City of Cleveland; MidTown, Inc.; GCRTA; and the Cleveland Foundation. The study created the marketing basis and action plan for attracting developers.⁹⁷ The vision for the HTC, according to one stakeholder, was to create “a knowledge neighborhood that captures the market of post-incubator technological and laboratory firms emerging out of the Cleveland Clinic, University Hospitals and our educational institutions.”⁹⁸

**The new MidTown
Mixed-use District 1
(MMUD-1) zoning
focused on creating
ground level retail.**

ROBERT BROWN, DIRECTOR OF
PLANNING, CITY OF CLEVELAND.

Financing

The City of Cleveland had a variety of financing tools at its disposal to help realize its vision. Some were in the form of direct grants, others were low-interest loans, and still others were tax credits. Financing was provided by the state, the federal government, and foundations.

Grants

The federal government, the State of Ohio, and Cuyahoga County all have grant programs that aid development activities. Indeed, the GCRTA was able to secure a Federal Transit Administration New Starts grant of \$82 million and Ohio Department of Transportation (ODOT) Transportation Review Advisory Council (TRAC) funding of \$75 million toward the construction of the HealthLine BRT and some of its associated street reconstruction costs. However, many other grant programs at the state and federal level have provided tremendous assistance in stimulating development along the HealthLine BRT corridor.

Two main grant programs in the State of Ohio assisted with land acquisition and pre-development activities. The first, the Clean Ohio Brownfield Revitalization Fund, was a competitive state-level award that “provides grants to address environmental obstacles and remove blighting influences”⁹⁹ on former commercial and industrial properties. Sites require an engineering firm’s certification of an environmental problem that can be mitigated through the program. Clean Ohio grants were awarded to two sites in the MidTown neighborhood where contamination was high. In 2003, the City of Cleveland applied for a Clean Ohio grant for a site on Euclid Avenue between East 57th and East 61st streets that housed the Wooden Spencer Screw Factory, an old industrial warehouse building. The building had to be purchased, and the rest of the land — including ground water — assembled and decontaminated. Though the program was competitive, MidTown, Inc. was awarded \$3 million due to the strength of its application. The award was granted directly to MidTown, Inc. because it owned some of the land and was going to act as the developer.

In 2010, another Clean Ohio grant, for \$2 million, was awarded for the rehabilitation of a site on Euclid Avenue at East 66th Street. This

time the grant went directly to the developer, who was assuming a prominent role in developing the site. The Health-Tech Corridor concept was a strong reason that the project scored highly in the competitive process.

The second major grant program in the state is the Ohio Job Ready Sites (JRS) Program, which provides grants for the development of vacant commercial and industrial sites with the “ability to provide optimal infrastructure capabilities and attract economy-shifting investment.”¹⁰⁰ These grants focus on vacant properties that are not necessarily contaminated but that are strategic for economic development purposes. The funds may be used for site development activities such as property acquisition, infrastructure upgrades, or “construction build-out of speculative facilities.”¹⁰¹

The grants also require that the project be committed to one specific use — research, medical, technology, etc. — at the time of application. This requirement has made the goals of the grant somewhat difficult to achieve, since it is not always possible to secure a committed tenant at such an early stage in the development. To date, two sites on the HealthLine corridor have been awarded Job Ready Sites grants. The MidTown Tech Park (see “The first MidTown development,” p. 137) received a \$3 million JRS grant in 2010, and the Victory Building, at 7012 Euclid Avenue, received a \$1 million grant in 2012.

Since the initial development activity in the MidTown area, the Clean Ohio program has been changed and may be eliminated; and the JRS program is under review for 2013 and may be cancelled. No additional state grant programs are on the horizon to replace these two programs.

Finally, the City of Cleveland was designated a federal entitlement city under the Community Development Block Grant (CDBG) program, and therefore receives annual grants directly from the Federal Government instead of receiving them from the State of Ohio. Grants made under the CDBG program are intended to “develop urban communities through decent housing, suitable environments and expanded economic opportunities.”¹⁰² Cleveland has also utilized funds from HUD Section 108, the loan guarantee provision of the Community Development Block Grant (CDBG) program. The HUD 108 low-interest

urban development loans provide communities with a source of financing for economic development, housing rehabilitation, public facilities, and large-scale physical development projects.¹⁰³ These loans are made to the City of Cleveland, which can then pass them on to the developers of projects that create jobs within the Neighborhood Revitalization Strategy area, which includes the Health-Tech Corridor.

Foundations and Funding Intermediaries

Foundations have been major contributors of urban development grants in the last decade. Between 2005 and 2008, the number of grants awarded in Ohio for economic development increased 25%, and the number of dollars awarded for this purpose increased 152%.¹⁰⁴ Thirty percent of these economic development grants were concentrated specifically on urban development.

Several private Cleveland-based foundations, like The Cleveland Foundation, the Mandel Foundation, and The George Gund Foundation, have played and continue to play an important role in redevelopment efforts in Cleveland. The Cleveland Foundation helped MidTown, Inc. to establish a \$750,000 line of credit for land acquisition and predevelopment activities in the MidTown neighborhood.

While these foundations have awarded funds directly to organizations like MidTown, Inc., much of the time they go through a funding intermediary — an organization called Neighborhood Progress, Inc. (NPI) — that administers the grants. Neighborhood Progress, Inc. was founded in 1988 with seed funding from the Ford Foundation, local foundations, and corporations; it serves as the local funding intermediary between community development corporations and local foundations (see p. 67).

Tax credits and Empowerment Zones

To finance much of the redevelopment along the HealthLine corridor, interested developers and the City of Cleveland have turned to federal tax credits — specifically New Market Tax Credits (NMTC) and Historic Preservation Tax Credits. In Ohio, the New Market Tax Credit (NMTC) program helps to finance business investment by providing investors with state tax credits in exchange for delivering below-market-rate investment options to Ohio businesses. At least \$50 million in NMTC have been used to finance development along the HealthLine corridor. Among many other projects, NMTC have been used in downtown Cleveland for the Middough Building and the Allen Theater; for the redevelopment of the Baker Electric Building, the MidTown Tech Center, and the Agora Building in MidTown; and in University Circle for the redevelopment of a hotel property and for the Uptown development. These tax credits have also been used for several residential buildings, including the Hanna Annex in downtown Cleveland.

Historic Preservation Tax Credits, which are given to owners and lessors for the rehabilitation of historically significant buildings, have been used along the HealthLine corridor, for the Baker Building and the Victory Building, and in downtown Cleveland, where many of the buildings are historical. Historic Preservation Tax Credits have provided further financing for projects like the Hanna Annex building, the Allen Theater, and the Middough Building.

MidTown was a part of a Federal Supplemental Empowerment Zone that did not expire in 2008, as other empowerment zones did. This empowerment zone provided tax credits and low-cost HUD 108 loans to qualifying businesses in the zone. It also provided funding to MidTown, Inc. for land acquisition. In addition to making loans available, the empowerment zone designation also provided grants for gap financing for projects through 2005. Cleveland received \$177 million in loan and grant funds to help grow the business and residential community in several neighborhoods, including MidTown. The City of Cleveland has some HUD 108 loan capacity and has prioritized the Health-Tech Corridor as a location for the use of these funds to promote new investment and create jobs.





New Market Tax Credits helped finance the mixed-use uptown buildings.
LAUREN PARSELLS



New Market Tax Credits were used to finance the redevelopment of the Middough Building in downtown Cleveland.
OHIO OFFICE OF REDEVELOPMENT

Vacant Property Initiative

The City of Cleveland Department of Economic Development created a program called the Vacant Property Initiative. The program was developed to help developers overcome the costs of urban redevelopment that do not add value, including asbestos abatement, other brownfield cleanup issues, renovation and/or demolition. The program offers a short-term construction loan and a forgivable loan, based on the potential for job creation.

As part of this program the city conducts a “return on investment” (ROI) analysis for each project. These analyses determine the loan amount per project based on what the market needs to attract the investment. The loan amounts vary, therefore, based on market conditions. In 2008, due to the weak market, the program offered loans of up to \$1,250,000, with \$550,000 forgivable. Today, such loans are offered to a maximum of \$780,000, with \$180,000 forgivable per project. The city had about fifty loans outstanding in 2012, totaling about \$26.5 million. The forgivable portion of the loan is linked to a promise of job creation. If the investment creates the promised number of jobs, the city forgives that part of the loan. The forgivable loans have a three- to five-year job creation period and are subordinated to other debt. This allows the city to enforce repayment should the company not

create jobs. These Vacant Property Initiative loans have so far resulted in \$261 million in new development, created about 3,500 jobs, and retained another 1,955 jobs.

The Department of Economic Development (EDD) is a “one-stop shop” for businesses and developers. The EDD tries to be as responsive to their needs as possible by streamlining permits, knowing the brokers well, and working cooperatively to handle issues that may arise. The city started the Vacant Property Initiative primarily to be responsive to such developer concerns. In addition to the rehabilitation of vacant sites and cleanup of contaminated land, a big part of this program focused on removing the other risks associated with developing vacant land or buildings. The MidTown Tech Park (all three buildings), Cleveland Agora, and the Victory Building all benefitted from the Vacant Property Initiative.

Current Development: Downtown, University Circle and MidTown

Development has proceeded somewhat differently in each of the three neighborhoods along the HealthLine corridor: downtown, University Circle, and MidTown. The urban developments that have emerged along the corridor were hardly the result of pure market forces. In downtown Cleveland, for example, some 45% of the cost of new development was underwritten by federal and state governments through loans, credits, and other public programs.



Much of the development seen in Cleveland has been around University Circle, which has a concentration of education and medical institutions.

LAUREN PARSELLS

Downtown and University Circle

To date most of the development along the HealthLine has been in downtown or University Circle, reenforcing the economic strength of these two employment hubs. A goal of the City of Cleveland is to increase the number of residents in downtown. In the 1980s the residential population in that area had fallen to about 3,000. Downtown had already started recovering in the 1990s, with a doubling of its residential population; by 2011, it was up to 11,000. Today it is around 11,700, and 3,000 more residential units are planned in the downtown area. Almost all of this growth has occurred along Euclid Avenue or in the immediate surroundings. Also in the area on and near the HealthLine are seven new hotels and some major new residential conversions. Many retail brokers believe that to reach the critical mass needed to attract world-class retail in downtown, the population needs to increase to over 25,000. That goal is a priority of the city and its mayor.

University Circle is responsible for the bulk of the remainder of the TOD investment so far. The University Circle, Inc. CDC launched a \$7-million-dollar corridor revitalization initiative along Euclid Avenue with the help of the Kent H. Smith Charitable Trust that upgraded pedestrian facilities, built the University Circle Visitor and Living Center, and funded streetscape enhancements such as lighting, benches, and flower beds. Some \$2 billion in construction and renovation projects have been invested into this area, about \$96 million of which was devoted to residential and commercial development, with the remainder going to university buildings and cultural institutions. The Case Western Reserve University and University Circle, Inc. also spearheaded a \$100 million redevelopment of a retail district along Euclid Avenue into an arts and retail district. Additional investment in this area includes the \$350 million renovation of the Cleveland Museum of Art¹⁰⁵ as well as \$27.5 million for the construction of the new Museum of Contemporary Art.

The EDD also looked to increase the number of market-rate residential units in both downtown and University Circle, where there are long waiting lists for rental housing, and new residents will help attract high-quality retail. Some housing investment in the Greater University Circle area has been stimulated by a program that offers a \$5,000 to \$15,000 grant for those who buy a home, and one month's free rent for those who rent in the Greater University Circle area. This program exists in several neighborhoods on the outskirts of University Circle where there are higher vacancy rates, but not on the HealthLine itself.

MidTown

Much more difficult than the stimulation of development in downtown and University Circle, and the focus of the most intense municipal efforts, has been the revitalization of economically distressed MidTown. By 2005, the detailed BRT plans, together with significant streetscape and infrastructure improvements, were completed, as were the zoning changes for MidTown. With these investments and regulatory changes in place, both the Cleveland Economic Development Department and MidTown, Inc. had the information they needed to begin attracting investors to the area.



The Keith Building, a new residential building at Euclid Avenue and East 17th Street in downtown Cleveland. It opened with 236 units in 2010 and was fully occupied within months.

FLICKR BY BILLWTF



The Museum of Contemporary Art opened in 2012 and stands at Euclid and Mayfield Road.

LAUREN PARSELLS



**Student housing at
Euclid Avenue and East
24th Street in
Cleveland.**

LAUREN PARSELLS

**New Cleveland State
University Law School
addition at Euclid
Avenue and East 18th
Street.**

LAUREN PARSELLS



Preparing the Land

The Department of Economic Development was responsible for assembling land, clearing the sites, and cleaning up any environmental contamination. Much of the land was on brownfield sites that needed significant environmental cleanup to be ready for development. On other sites, deteriorated industrial buildings and their related infrastructure, such as underground oil tanks, had to be removed. Some properties also needed to be purchased from owners, some of whom were in arrears with their taxes.

The work done by the University of Pennsylvania (UPenn) to revitalize blighted areas of Philadelphia in the mid-1990s was a major inspiration to Cleveland. At the time, UPenn's enrollment was suffering because of its proximity to West Philadelphia, which was economically depressed, crime-ridden, and blighted. To combat these problems, UPenn worked with the Pennsylvania Minority Business Development Agency and local businesses to identify local vendors that UPenn could partner with to generate employment for local residents and thus increase the area's economic base. Over time, UPenn helped local businesses grow; in 2010, UPenn spent \$116.9 million with local and diverse businesses. Such efforts have been successful in increasing tax revenue from local businesses and residents and helped to revitalize West Philadelphia.¹⁰⁶ In an effort to inspire confidence among investors in Cleveland, the city's Department of Economic Development brought potentially interested investors to Philadelphia to witness the revitalization of the neighborhoods around the University of Pennsylvania. Similar to the Philadelphia case, developers were interested in MidTown mainly due to its proximity to multiple academic institutions, with the anchor of University Circle nearby.

MidTown, Inc. and BioEnterprise for the Health-Tech Corridor, together with the Cleveland Foundation for Greater University Circle, applied for Living Cities funds. Living Cities is a private foundation intermediary that awards community redevelopment grants on behalf of 22 private foundations that it represents. An effort was made by the

Cleveland Foundation for Greater University Circle to work cooperatively and to combine the applications, which resulted in an award of a \$14.77 million Living Cities grant.¹⁰⁷ This grant paid for an engineering and planning study for the redevelopment of a few key sites.

MidTown, Inc. also worked hard to secure a new police station for the area that is now under construction. At the time, the site had been vacant for many years and was controlled by the city under the land bank program. The city is paying for the station with Income Tax Bonds, but grant funding paid for the design and engineering.

Another major, 10-acre site along the corridor was assembled by Lassi Inc., a partnership between a local developer and Midtown, Inc. The city loaned money for land acquisition to MidTown, Inc., which also used grants from the Gund, Cleveland, and Mandel foundations for acquisition and predevelopment costs. Midtown received approximately \$4 million in forgivable loans for the land assembly. Finally, to clear the site of environmental contamination, the City of Cleveland applied for and received a \$3 million Clean Ohio grant (see "Grants," p. 127). Originally, the land was intended to be the site of the first stage of a technology center in MidTown. The project did not go forward, however, and by 2008, the economy was in a recession and the developer had not completed the necessary environmental clean-up of the site. The city moved to take back the land and complete the clean-up. At one point, the city worked with the State of Ohio to plan a state behavioral health hospital at the site; but because the clean-up took longer than expected, the state built the hospital at another location. The city completed the clean-up and received the State of Ohio No Further Action Letter under the Voluntary Action Program¹⁰⁸ in December 2012. The land is currently being marketed, and an information technology company has taken an option on four acres.



The MidTown Tech Park, a Geis development at Euclid Avenue and East 69th Street, was the first new development in MidTown. With fewer urban characteristics than envisioned by the city, it was a stepping stone to the more urban-oriented development that has happened since.

GEIS

The First MidTown Development

The most difficult challenge of redevelopment is always to attract the first investor into a blighted area. The Department of Economic Development has deployed an “anchor strategy” for redevelopment, which uses the Cleveland Clinic, University Hospital, and Case Western Reserve University as anchors to attract other development. The HealthLine BRT provided the connectivity that made the Health-Tech Corridor a viable location for businesses that wanted to be close to the major institutions. The city works with the anchors — which include the Health-Tech Corridor, Evergreen Cooperatives, and Supply Chain Initiatives — and The Cleveland Foundation to deploy the anchor strategy.

The first major developer to show serious interest was Geis Companies, through its development arm, Hemmingway Development. They were interested in a site at 6700 Euclid Avenue that came to be known as MidTown Tech Park. Geis was a long-time developer in the Cleveland area whose other developments were predominantly based in the suburbs. Its proposal was for a one-story suburban-style development with a surface parking lot between the building and the street. So, despite expressing interest in developing in this revitalizing land market, Geis had reservations about the new zoning code and how their proposed development might fit in. The developer was not familiar with urban developments and was very nervous about the high density, the relative lack of parking, and the ground-level retail. Additionally, it planned to develop the property on a purely speculative basis — without any committed tenants.¹⁰⁹ The developer didn’t believe there was enough

demand for retail in the area to attract the necessary tenants for the ground-level retail spaces required by the new code. Neither was Geis sure that it could fill a three-story building in such an undeveloped area. As for the city, despite wanting to attract development to MidTown, the City of Cleveland was keen on attaining its vision, and it was not ready to accept point blank the first proposal it received.

A complicated negotiation ensued. While the city wanted the first development to become an example for the continuing build-out of MidTown, it was not in a position to fully enforce the new zoning requirements. The designs for the development went before the City Planning Commission’s design review committee. The Commission has the authority to grant exceptions for applications that fall outside of existing code. Through negotiations, both parties agreed that the development would follow the zoning code, with the following variances:

1. Geis would build a two-story building. This was a compromise between the one-story building that the developer had originally proposed, and the three-story building required by the zoning code.
2. The surface parking could be retained but had to be located behind the building rather than in front of it.
3. No ground-level retail would be built. City Planning Commission and the design review committee recognized that as the market turned around, it would be possible to enforce the zoning code more aggressively; but at that early juncture, they agreed to grant the variances.

Because of the recession, the developer was unable to secure a conventional loan for the project. The mayor offered a \$10.7 million HUD Section 108 loan, (floating rate based on three-month interbank borrowing rate and around one percent at closing) a low-interest loan that is secured by the developer’s guarantor and other guarantors but is pledged against the likely receipt of future Community Development Block Grant funds. Geis also received a \$250,000 grant from the city’s Vacant Property Initiative,



Newer developments in Cleveland, like the Victory Building conversion on Euclid Avenue and East 71st Street, have a livelier streetscape.

LAUREN PARSELLS

and an additional \$25 million in New Market Tax Credits, which were leveraged by the HUD loan (the rules of New Market Tax Credits are such that another loan must be in place in order to receive them). More uniquely, the Department of Economic Development made the decision to use the non-school portion of the property tax revenues anticipated from the project to guarantee repayment of the HUD loan.¹¹⁰ Geis then needed to secure approval from the Ohio Historic Preservation Office, which had attempted to block the development due to its supposed incompatibility with an historic stagecoach station.

Once Geis finally agreed to develop the property, the Department of Economic Development worked with Geis to aggressively market the corridor. They attracted JumpStart Inc., an innovative organization that provides venture capital and technical assistance to start up firms, to be the first tenant in the development. After MidTown Tech Park opened in 2011, Geis invested in a second and then a third development in MidTown, both involving renovating and reusing historic buildings. Each new development is more urban in character.

The Euclid Corridor and Affordable Housing

Because of the long-term economic and population losses suffered by Cleveland, rents are very low in the city, and the residential property market continues to be weak. Gentrification and increasing rents, however, are not the main problem for poor people in such an economy; rather, it is joblessness and poverty. As such, the city's efforts have been focused on job creation rather than on reducing upward pressure on housing prices.

Citywide, there were 44,812 foreclosures between 2006 and 2012, and there are currently about 15,000 vacant properties.¹¹¹ The city spent \$49 million clearing some 6,519 deteriorated properties between 2006 and 2012, leaving over 20,000 vacant lots, more than 11,000 of which are now owned by the city and held in its land bank.

Very few of these abandoned properties or properties seized for tax arrears are located along Euclid Avenue. There, properties are mostly commercial; land values have doubled in the last six years; and owners continue to pay their taxes if they think there is likely to be any market at all for the land.

It was debated whether or not to co-locate affordable housing along the Euclid Corridor. On one side, Mayor Jackson, who was a strong supporter of business development along the corridor, nevertheless believed that there was room for both uses. He felt that the city should support some affordable housing along with its transit improvements, since many of the residents in this corridor needed to utilize public transit. This view was supported in public dialogue by Chris Warren, the Mayor's Chief of Regional Development.

On the other side of the debate, MidTown,

Inc. at first resisted the co-location of low-income housing, including the two affordable-housing projects that do exist in MidTown. The CDC asserted that all of the housing in the area along the corridor was already “affordable” because it was located in a very weak market. They believed that the area needed jobs more than affordable housing, and if it was going to attract any kind of housing, it should be market-rate housing. They feared that low-income housing projects might scare off investors. The City countered that any investment in the area, including affordable housing, was still a positive development for the corridor, and that regardless, residents needed transit access and proximity to the resources of University Circle.

Despite the controversy, however, two relatively small projects in the MidTown section of the Euclid Corridor were for affordable housing: one provided 78 units of supportive housing for formerly homeless people, and the other 48 units of senior housing. One of them was developed by PIRHL, a developer of affordable housing; and the other by the Cleveland Housing Network and the nonprofit group Emerald Development & Economic Network (EDEN). Both opened in 2011. Despite the concerns of the business community, these projects have not had a negative impact on investment in the corridor.

In terms of gentrification, while property values did increase substantially along the Euclid Corridor subsequent to the HealthLine opening, and because almost none of this land had rental housing, the new affordable housing development had very little impact on rents, which in general remain relatively low in Cleveland. Nonetheless, it is important that the city anticipates the increase in land values and banks this land if it plans to do anything with it for public purposes, be it affordable housing, market-rate housing, or economic development. Property values have doubled overall along the Euclid Avenue corridor in the last six years, and some properties have increased much more sharply. A 6.2-acre lot along Euclid Avenue with a surface parking lot sold in 1984 for \$35,000. In 2005, with the announcement of the BRT project, this parcel appreciated to \$75,000. In 2008, after the HealthLine opened, a speculator bought the land for \$110,000. An interested developer then bought the same land for \$276,000 in 2010. Today, just three years later, the county has estimated the land’s value at \$1.08 million.¹¹²

The Greenbridge Commons development at Euclid Avenue and East 75th Street includes supportive housing for formerly homeless people and is one of the two affordable-housing developments in Cleveland’s MidTown neighborhood.

LAUREN PARSELLS



Reinventing Pittsburgh's East Liberty BRT Station

The Port Authority of Allegheny County's bronze-standard BRT corridor, the Martin Luther King, Jr. East Busway, is the oldest BRT system in the US and one of only seven true BRTs in the country. Yet the system had limited impact on transit-oriented development for the first twenty-five years after it opened. Unlike the case with the HealthLine BRT in Cleveland, urban revitalization was not a core objective of this project, and there was limited municipal effort to concentrate development along the MLK Jr. East Busway BRT. In the last few years, however, at the initiative of a local neighborhood CDC and the Pittsburgh philanthropic community, and with support from the city, one key node has become an active TOD site: East Liberty. Some \$900 million in new investment has been attracted to East Liberty, and investments have been secured for a major station-area redevelopment around the East Liberty BRT station. Three other potential nodes along the MLK Jr. East Busway BRT could also redevelop if the efforts in East Liberty are successful.

East Liberty was once rife with activity but has since declined.

ELDI



Background

From the 1950s to the 1970s, East Liberty was known as the “second downtown” of Pittsburgh. With a vibrant residential population and streets lined with prosperous shops, it was the third-largest shopping center in Pennsylvania.¹¹³

As urban renewal swept the US in the late 1950s and throughout the 1960s, the dense and active urban fabric of East Liberty was replaced by parking lots and car-oriented development. The commercial core was cut off from the surrounding residential neighborhood by a new four-lane, one-way highway, Penn Circle, which severed many through streets and pedestrian paths that connected the neighborhood. Over the next two decades, as the steel industry collapsed, East Liberty lost its economic base as well as much of its residential population. Three large, 200-unit high-rises, originally intended to be market-rate housing, quickly became ill-maintained low-rent housing and then HUD-subsidized housing. As upper-income people relocated to the suburbs, many of the market-rate historic homes were left vacant and fell into disrepair. The combination of the blighted housing blocks, the vast expanses of surface parking, and the loss of the middle- and

upper-income residential population caused the area to lose about a million feet of commercial space to abandonment.

Starting in the late 1960s, the Port Authority of Allegheny County initiated a transit planning process to help ease congestion. The Authority could no longer afford to maintain its streetcar system, which was phased out entirely by 1971 and replaced with normal bus services, and it developed some lower-cost alternatives for improving the transit system. Included in these plans were two busways to be located in former rail right-of-ways: the South Busway, which opened in 1977, and the East Busway, which opened in 1983. The East Busway ran through East Liberty and thus introduced a critical mobility link between downtown and East Pittsburgh, one of the poorer neighborhoods in Pittsburgh. When the East Busway first opened, it was 6.8 miles long and rerouted a number of bus routes from surface streets. A trip that had previously taken approximately an hour due to congestion was reduced to a 7- to 15-minute trip. (A 2.3-mile extension was completed in 2003.)

The three towers in East Liberty were originally intended to be market rate housing, but because of changing ownership, fell quickly into disrepair.

ELDI



The Martin Luther King, Jr. East Busway BRT

Pittsburgh's BRT service plan stands out as one of the only BRT systems in the US with direct services: those that connect people directly from their homes to their jobs. The corridor takes advantage of the time-saving elements of the busway and offers a variety of local and express services. It is the only BRT system in the US with passing lanes at stations that allow express buses to pass local buses stopped at stations. Finally, it carries some 24,000 passengers per day, making it the second-highest-traveled BRT corridor in the US after the Los Angeles Orange Line. At 30 miles per hour, the speed on the system is high because it has a fully dedicated right of way.

Otherwise, the system lacks several basic BRT elements: There is no off-board fare collection, no platform-level boarding, and no bike lanes; and the stations are side-aligned rather than center-aligned. The stations, the buses, and the pedestrian approaches are purely utilitarian if not low quality, with minimal protection from the elements and no sense of brand or style. Unlike in Cleveland, there are no iconic stations to signal that this is an important part of the city. Historically, the system was used by poor minority residents; even today, it is not considered a high-status service. The corridor also terminates just short of the city center, leaving buses to fight through congestion precisely where congestion is worst. Upgrading this BRT to silver or gold should be a high priority.

The busway system was not developed with urban economic development goals in mind. The former rail right-of-way on which the East Busway was built historically divided Pittsburgh's relatively wealthy communities of Squirrel Hill and Shadyside to the south from poorer, predominantly African American communities to the north, where East Liberty is located. It wasn't until after 2000 that East Liberty started to redevelop, and the racial and economic divide along the East Busway began to break down.

Although some of the land along the BRT corridor had seen industrial uses and was brownfield, this was not an obstacle to development, because Pittsburgh is a national leader in brownfield redevelopment. A bigger obstacle was that the land was subdivided into many small parcels whose title deeds often were

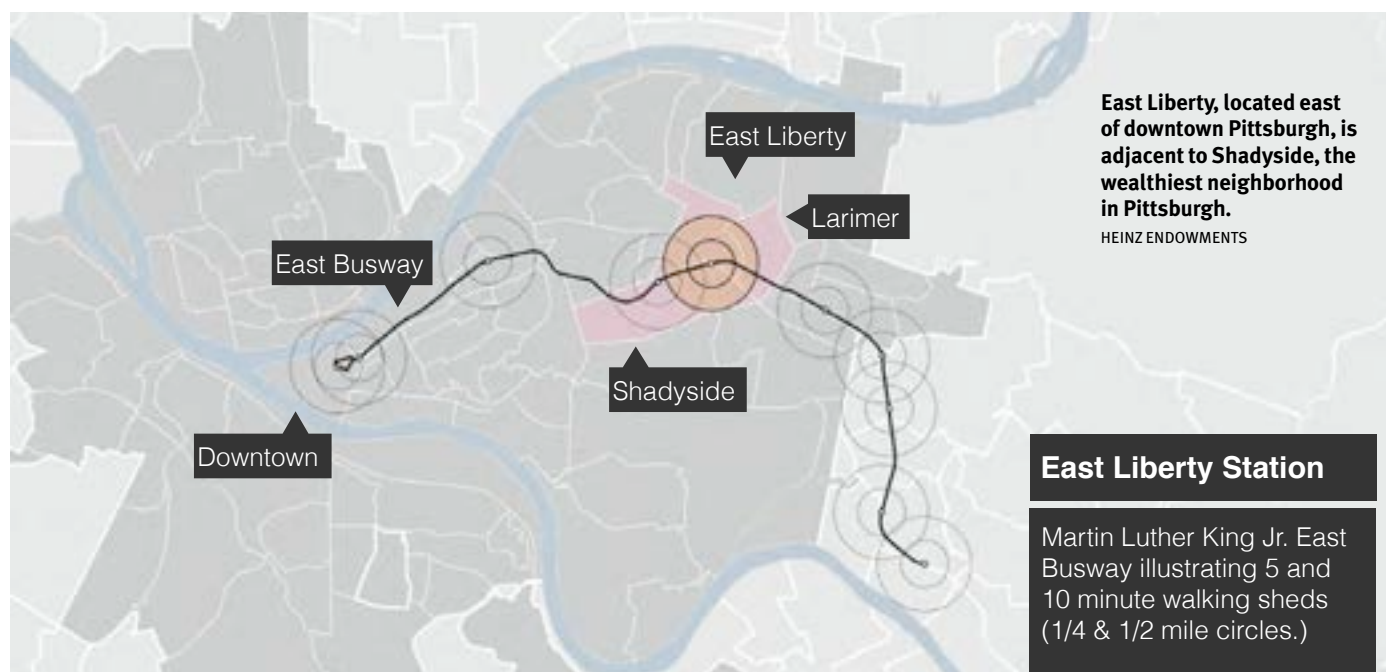
not clear.¹¹⁴ Another obstacle was the lack of developable land along the corridor, given its former industrial uses as well as the busway's location along a below-grade rail right-of-way.

The BRT system's initial impact on land values was not straightforward. On the wealthier side of the East Busway, property values have increased by a factor of four since the 1980s. On the other side, average prices dropped from \$22,000 to \$6,000 per square yard.¹¹⁵ Given this variance, other factors probably had more impact on land values than the busway did.



At peak hour, buses arrive every two minutes along the MLK Jr. East Busway.

ITDP



Early Private Initiatives to Redevelop East Liberty

The redevelopment of East Liberty is mainly a story of private initiatives and how they leveraged and focused government efforts. Many of Pittsburgh's wealthiest families had an historical presence in the area, which had been a lively cultural district until the 1950s, and they wanted to see the area revitalized. Private efforts to revitalize East Liberty began in earnest around 1979. That year, the East Liberty Chamber of Commerce, frustrated by the decline of their once-vibrant neighborhood, formed East Liberty Development, Inc. (ELDI), a nonprofit community development corporation (CDC) with a three-year grant from the Ford Foundation for operating support.

ELDI's mission was to facilitate redevelopment of the neighborhood. In its early years, ELDI, initially a two-person operation, worked to reopen the streets closed by Penn Circle, and to attract commercial development. The Local Initiatives Support Corporation (LISC) provided a financing pipeline for these commercial development projects; but despite good intentions, the developments were not large enough or sufficiently integrated into the community to play a catalytic role in the transformation of East Liberty. So, although private development began to return to the neighborhood in the late 1980s, the economic vitality of the neighborhood was weak. Neither the business community nor residents were willing to make substantial long-term investments. Failure of the commercial development deals bankrupted the small CDC, leading to a period of upset in the nascent organization.

About a decade ago, the Southwestern Pennsylvania Commission, a regional planning body funded largely by the Pittsburgh philanthropic community, developed a long-range plan that provided some proposals for the early stages of the revitalization of East Liberty. Carnegie Mellon University also brought their own world-class planners and urban designers to help put together a vision for the neighborhood.

Although ELDI had developed a few properties on its own in East Liberty, the organization lacked the ability to initiate broader interest in the area from developers. When Tom Murphy became the mayor of Pittsburgh in 1994, he set the revitalization of Pittsburgh as a top priority and created a funding mechanism that has made many redevelopment efforts possible, including those in East Liberty. Mayor Murphy created a mechanism called the Pittsburgh Development Fund (PDF), a revolving fund for community and economic development that is managed by the city's Urban Redevelopment Authority (URA). The fund came from an earmarked portion of the revenue from a 1% sales, use, and hotel excise tax levied on top of the existing 7% Allegheny Regional Asset District (RAD) tax.¹¹⁶ With about \$6.2 million of these tax revenues earmarked for the PDF each year for ten years, the URA was able to issue \$60 million in Special Tax Development Bonds to fund development anywhere in Pittsburgh. The PDF funds were loaned to developers at low interest rates, and they only had to be repaid once the projects reached a certain revenue threshold.

These strategies — providing loans that would eventually be repaid, and requiring developers to pay property taxes — allowed Pittsburgh to maximize its revenue over a long term while reducing the developer's risk.

The PDF funds were not, however, used primarily for East Liberty. The URA has devoted about a third of its efforts to various mayors' pet projects (most of which have tended to be along the waterfront). Another one-third tended to respond to developer interests in properties throughout Pittsburgh. Only about a third of the money from the revolving fund was deployed on projects linked to strategic, long-range plans such as TOD along the East Busway BRT.

Of the 1,500 acres of land acquired across the city by the URA, most was occupied by vacant buildings, abandoned steel mills, and dilapidated affordable-housing projects. However, among the acquisitions was a large plot in East Liberty that was formerly home to a Sears store. The East Liberty plot had been vacant for ten years and symbolized the decline of the once-vibrant neighborhood. Mayor Murphy and his team identified The Home Depot as a possible anchor tenant for the Sears site because of the chain's mass popularity — every demographic shops there, and the store could attract shoppers from the surrounding wealthy neighborhoods. From a TOD perspective, however, Home Depot was not so ideal: it tends to cater to suburban motorists, and the site was far from the East Liberty BRT station.

At first, Home Depot was not interested because it considered the site too far from the interstate. The developer was also deterred by the unstable and violent history of the neighborhood. Unwilling to take no for an answer, Mayor Murphy, with the help of the then-mayor of Atlanta and the local Pittsburgh Jewish community, brought Home Depot cofounder Bernard Marcus to Pittsburgh.¹¹⁷ While in Pittsburgh, Murphy took Marcus on a tour of the site and convinced him of the neighborhood's potential and of his belief that Home Depot's role as an anchor tenant could help catalyze the neighborhood. With Home Depot's commitment, Mayor Murphy and the URA set out to finance the project. The project cost a total of \$11.35 million, of which Home Depot covered \$5.33 million, or 47%. The city was left to figure out financing for the remaining \$6.02 million. PDF funds were used to assemble the site and pay for

the environmental clean-up, and the city created a TIF district (called TRID in Pennsylvania) on the parcel to finance the \$1.67 million in bonds that allowed the city to rehabilitate the site to make it suitable for Home Depot.

Although the site was not particularly close to the East Busway (approximately one-third of a mile away), and it was car-oriented in design, with a massive surface parking lot, attracting Home Depot was important to the city's efforts to encourage additional transit-oriented development closer to the East Liberty BRT station.

In addition to using creative financing to attract Home Depot, the city also worked with the company on the physical design of the store. Zoning in Pittsburgh is relatively lax, and in poorer neighborhoods almost everything is negotiable. Both high- and low-density residential development is allowed, with density bonuses given to developments near transit. Additionally, zoning regulations limit automobile access to East Liberty by restricting car-oriented land uses and reviewing developments that request more



than ten off-street parking spaces. Home Depot's plans, reflective of its suburban roots, detailed expansive parking lots that were not in line with Mayor Murphy's goals for the revitalization of Pittsburgh — namely to transform the area into a denser, mixed-use urban center. However,

Although the urban design was not ideal, securing Home Depot as the first major development in East Liberty in decades was a success.

ELDI

the home goods retailer eventually agreed to a parking lot that was one-third the size of those required for its normal suburban locations. The planned parking lot was still larger than what the city would have liked; but, wary of losing its anchor tenant, the city agreed. The Home Depot opened in February 2000, confirming East Liberty's market potential and the purchasing power of the urban core of Pittsburgh, and it set the stage for more development.

As plans for the Home Depot were being finalized, several concurrent initiatives furthered the momentum spurred by the store's introduction to the city. First, the City of Pittsburgh commissioned a market research study of East Liberty. This study found that, at least initially, big-box retailers would be the most successful commercial businesses in the area, but that there was also a need for smaller specialty stores and restaurants that could keep people in the neighborhood.

Second, in 1999, ELDI, with the support of the City of Pittsburgh, embarked on the first comprehensive plan for the neighborhood. After its troubles in the mid-1990s, ELDI brought in Maylene Meyers, a transplant from Cleveland, to lead the organization. Meyers recognized that the neighborhood needed a vision in order to attract development, businesses, and residents. The plan, *A Vision for East Liberty*, developed a shared concept that residents could believe in, that community leaders could help implement, and that could help create a new attitude toward East Liberty, attracting business and residential development.

The plan contained a number of recommendations, including:

- New mixed-income housing
- Active streets
- Reconnecting surrounding residential neighborhoods to the core of East Liberty and downtown Pittsburgh via the Busway
- Closing Penn Circle
- Broadening the mix of business and entertainment venues
- Beautifying the neighborhood and connecting residents to good schools and job opportunities

The plan, though unaccompanied by actual zoning changes, placed particular emphasis on the underutilized East Busway, highlighting it as a link to regional jobs as well as a means to reinforce activity in East Liberty's commercial core.

Home Depot moved in early in 2000, but it was far from the East Busway and still very suburban in character. Attracting higher-end retail that was more transit-orientated required more work. With the market research study and the community plan finalized, East Liberty's market potential was on the rise and beginning to attract private developer interest.

At the time, about 30% of the roughly 40 acres of land in East Liberty was owned by the City of Pittsburgh, mostly in the form of surface parking lots and two large properties in tax arrears. A local developer, The Mosites Company, took notice of the area's growing market potential and saw opportunities for success if the surrounding wealthier residents of Shadyside, Squirrel Hill, and Highland Park could be attracted to businesses in the area. Steven Mosites, Jr., a Shadyside resident, was as interested in helping revitalize East Liberty as he was in turning a profit. The Mosites Company had assembled a large parcel in East Liberty with the intention of attracting Whole Foods Market, a chain with a reputation for creating jobs and with an interest in edgy locations.

Mosites, working with Mayor Tom Murphy, had already secured a \$3 million investment from Three Rivers Bank and \$850,000 from the URA, a \$1 million loan from the national LISC, and a \$1 million guarantee for a bond from PNC Bank. The \$1 million bond guarantee allowed Mosites to secure private debt to finance the project,

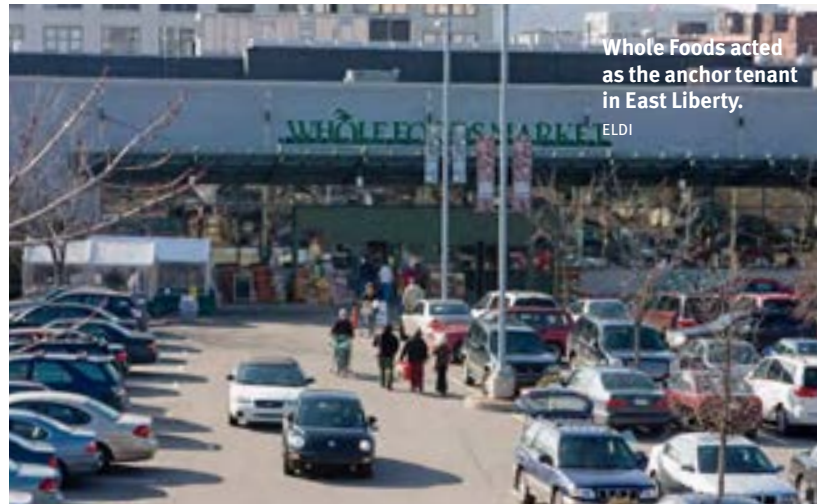
but there was still a gap. After learning of ELDI's strategic plan, he approached Rob Stephany of ELDI with two goals: to partner with the organization to help introduce and sell the project to the community, and to obtain help securing nonprofit, local, state, and federal grants. Mosites was particularly interested in obtaining ELDI's assistance to acquire either soft monies¹¹⁸ or subordinated funds¹¹⁹ for the project.

ELDI approached several local foundations. All of them were interested but did not want to simply provide ELDI with funds, as they had with previous projects that were unsuccessful. One foundation in particular turned to LISC as a partner, which then took the foundation's funds and provided ELDI with equity capital to invest in the project. ELDI then made a loan to the private developer, which was to be repaid after Whole Foods achieved a certain profit margin. This return was critical to ELDI, as it generated cash flow for the organization and became a performing asset on their balance sheet. To close the remaining gap in financing, ELDI secured a \$500,000 grant from the US Department of Health and Human Services for job creation in depressed neighborhoods.

The collection of these funds then closed the deal with Whole Foods. In addition, the city Department of Transportation agreed to convert Centre Avenue, a major artery through East Liberty's business district, from a one-way street to a two-way street. This change, completed in only eight months, helped link East Liberty to other neighborhoods and to downtown.

After Whole Foods opened, the neighborhood character changed. Today, there are bicycles chained to the store, and for the first time, people are boarding the MLK Jr. East Busway buses carrying bags of food.

Bakery Square 1.0, home to internet-service giant Google and located only about two hundred yards from the East Liberty BRT station, is another success story. The development consisted of the renovation of an old vacant Nabisco factory. In 2006, the city deemed the factory site blighted, and a \$1 million grant from the state Department of Environmental Protection for environmental clean-up made it more attractive to developers. In 2007, Walnut Capital, a Pittsburgh developer, bought the site after observing the success of the Whole Foods market. To finance redevelopment, Walnut Capital put together a combination of



Whole Foods acted as the anchor tenant in East Liberty.
ELDI



Historic Preservation Tax Credits, \$10 million in tax-exempt financing under the state's Building PA program, and a \$10 million TIF package from the Urban Redevelopment Authority. The building is now a major office building and home to Google, which had occupied a smaller space near Carnegie Mellon University, as well as to other technology companies.

An old Nabisco factory that was available for redevelopment became a prime site for the Google office in Pittsburgh.

WALNUT CAPITAL

The presence of Google in East Liberty has helped attract more development to the area, including a Target store. The store is also a Mosites Company project and, along with Bakery Square and Google, has helped to solidify East Liberty's resurgence. The East Liberty Target was built on the site of one of three 200-unit high-rises that had been used as subsidized housing. The buildings' fortress-like, blockish design and emergence as a locus of crime had long contributed to neighborhood blight, so their demolition signaled a real change in East Liberty. Similar to his thinking on the Whole Foods project, Mosites wanted to bring in a retailer that was interested in edgy locations and that could attract the wealthier residents of Shadyside while

remaining accessible to more moderate-income communities. The Target store was financed with a combination of private and public funds, including \$2.1 million from the state Department of Community and Economic Development, \$2 million from Pennsylvania's Redevelopment Assistance Capital Program (RACP), and \$46 million in New Market Tax Credits (NMTC) from LISC and PNC Bank. The NMTC helped to leverage an extra \$13 million equity investment from PNC Bank and a \$20 million loan from M&T Bank. HUD also awarded a \$10 million grant to rehabilitate the site. Part of the Target construction also was designated a TIF district that funded the bi-directional conversion of Penn Circle South from Highland Avenue to Collins Avenue, an important link in the community. The complicated financial deal, and Target's success in creating 200 jobs and \$1.6 million annually in tax revenue, has paved the way for more development, including the TRID district addressed below.

The assembly of funds for Whole Foods became the framework for what is now the East End Growth Fund. The East End Growth Fund was critical to attracting new real estate development to East Liberty. The success of the investment model used to close the gap for the Whole Foods' development was scaled up, and over the next year the McCune Foundation, Heinz Endowments, the Hunt Foundation, the R.K. Melon Foundation, and Pittsburgh Foundation collectively gave \$2.47 million to the East End Growth Fund to invest in more projects. With cash flow coming in, ELDI was able to start securing lines of credit, which have been used to buy and revitalize more properties, especially affordable housing properties.



The new Bakery Square development is becoming a hub for innovative technology companies. In addition to Google, CMU's Software Engineering Institute and University of Pittsburgh's Roar Lab are tenants, among others. WALNUT CAPITAL



**A new Target was built
on the site of one of the
three highrises.**

THE MOSITES COMPANY

Affordable Housing in East Liberty

ELDI also began to focus on residential development. One of the goals of the East Liberty comprehensive plan was to retain a vibrant, mixed-income population. However, the plan concluded that the three massive affordable-housing estates in the center of the neighborhood had to be replaced. These looming 20-story towers represented precisely the sort of concentration of poverty, crime, and violence that HUD and other urban experts now try to avoid by better integrating low-income families into mixed-income neighborhoods. Both the residents and developers identified the towers as a negative influence on the neighborhood and market. However, all three high-rises were at that time owned by an investor group in Florida and could not be easily acquired.

In the meantime, therefore, ELDI focused on other properties in East Liberty. With subsidies from the Urban Redevelopment Authority, ELDI began to redevelop scattered dilapidated sites around East Liberty as mixed-income and market-rate residential projects; but, despite improving the condition of the sites, ELDI had a difficult time selling the units. Decades of blight

meant that East Liberty had to deal with many abandoned properties and absentee landlords. A 2000 study found that East Liberty was plagued by a 17% vacancy rate in its residential areas.¹²⁰ ELDI assumed that the lack of sales was due to the surplus of vacant and dilapidated properties. So, in 2000, with a \$250,000 equity investment that LISC provided based on the 1999 comprehensive plan, ELDI began acquiring vacant property. However, although ELDI took the vacant properties under its management, it did not attract buyers. Perplexed, ELDI turned again to LISC. The corporation provided a \$75,000 grant to hire StreetWorks, a consulting and development firm based in White Plains, New York, to analyze the existing planning and development studies and test them on the market. StreetWorks determined that although ELDI's approach was good, their sequence of actions was faulty. ELDI needed to attract upper-income residents to the neighborhood, but these people wouldn't come if the neighborhood was not safe and well maintained, or if it lacked amenities like shops, restaurants, and community and pedestrian spaces.

The new Whole Foods store represented the beginnings of attractive amenities for upper-income residents. To address the safety and maintenance problem, ELDI then turned to current residents, who helped the organization identify specific properties and tenants in the neighborhood that were problematic. These properties, referred to as "nuisance occupied properties," were then prioritized for redevelopment. ELDI set up a system that identified property types based on their condition and location, and then ranked them for development. With a Strategic Impact Grant through Pittsburgh Partnership for Neighborhood Development (PPND), which is the local LISC office, ELDI acquired abandoned homes throughout East Liberty, holding them for future sale or development. Leases were not renewed, and repairs were made, on properties whose tenants were deemed problematic. Once this was done, units began to sell. The equity base from the initial PPND grant leveraged a \$500,000 pre-development line of credit from LISC. ELDI's residential property holdings have since increased



East Liberty Development Inc is the primary developer of affordable housing in East Liberty.

ELDI

significantly, enabling the organization to acquire many more foreclosed properties.

The three problematic subsidized-housing high-rises were demolished in phases — the first one in 2005, and the remaining two in 2009. The URA purchased the three high-rise sites and optioned them to The Community Builders (TCB), one of the largest nonprofit developers of affordable housing in the US. Residents were given vouchers to move into either the first replacement units, which ELDI had vastly improved in design and quality, or the third tower, if replacement units were not available at the time. TCB primarily used Low-Income-Housing Tax Credits to build the replacement apartments, so timing of the tax credit awards dictated the pace of demolition and reconstruction. These initial affordable housing projects are not particularly transit oriented: they have large parking reserves and relatively low density despite being immediately adjacent to the East Liberty BRT station.

Nevertheless, since the revitalization efforts began, more affordable housing units — both multifamily and single-family — have been built in East Liberty than were demolished. The lines of credit that ELDI has been able to secure have allowed the organization to lead affordable housing development in East Liberty rather than rely on private developers to do so. ELDI turned to Low Income Housing Tax Credits and Historic Preservation Tax Credits, as well as to partnerships with the URA and Pennsylvania Housing Finance Agency, to finance the construction and renovation of homes. These homes, whether new or rehabilitated, have begun to stabilize East Liberty's blighted blocks.

TOD in East Liberty

With major commercial tenants and residential life returning to the neighborhood, there is now a desire among residents to make East Liberty more pedestrian and transit oriented. While the MLK Jr. East Busway has not historically been the primary driver of development in East Liberty, it is now viewed as an asset for future development projects. Some new developments now advertise proximity to the MLK Jr. East Busway.

In 2004, the state of Pennsylvania passed the Transit Revitalization Investment District Act to encourage transit-oriented development. The legislation provides resources for station-area planning and establishes a district-based tax increment financing mechanism to leverage increases in property values near transit for the purpose of funding infrastructure investments. The Transit Revitalization Investment Districts, or TRIDs, are designated areas that can be established within one-eighth to one-half mile of a transit station and used to capture the increment in property tax due to the revitalization efforts. TRID differs from TIF in that it does not require a finding of blight in the district, as many states and municipalities require, and it emphasizes comprehensive planning as an important tool in the process.¹²¹

While many municipalities in Pennsylvania have received funds for the TRID planning process, no TRID funding district has been created to date. In 2008, ELDI completed a planning study to evaluate the differences between TIF and TRID. The 2008 study estimated that, under a baseline development scenario, future development would generate enough tax revenue to support an infrastructure bond of \$18 million using TRID or \$16 million using TIF, and that total funding needed was around \$70 million.¹²² Following the study, ELDI was able to raise \$40 million from federal, state, and local sources to finance development, but it was unable to use New Market Tax Credits because of the wealthy adjacent neighborhoods and because Pittsburgh was at its 10% limit for TIF use. ELDI returned to the idea of using TRID, which enabled ELDI to approach the Port Authority and include the rehabilitation of the East Liberty station and other Port Authority-owned lands in revitalization plans. Additional financing came in 2012, when Pittsburgh was

The demolition of the three problematic high-rises was a turning point in the redevelopment of East Liberty, making the area safer and more attractive to developers.

ELDI



awarded a Transportation Investment Generating Economic Recovery (TIGER) grant for the relocation and revitalization of the East Liberty station along the MLK Jr. East Busway. To cover the remaining funding gap, ELDI turned once again to its foundation partners. Based on the East End Growth Fund model, local foundations agreed to provide payment guarantees for financing the TRID and other projects, as well as set up a fund for other projects.

With financing in place, ELDI and the City of Pittsburgh are now working on establishing a TRID. However, TRID has not actually financed development to date because cities in Pennsylvania have not been able to find the monies to guarantee the tax increment before the district starts generating revenue. When a large district like a TRID is first established, much of the incremental revenue flow is speculative, and the up-front financing is not available until construction is completed.¹²³ Unlike in other states with stronger land markets and thus more predictable increases in property-tax revenues, confidence in Pennsylvania cities' ability to generate tax increments has been relatively weak. The challenge facing the East Liberty TRID,

and other early TRID projects, has therefore been to jump-start incremental tax revenues within the district. Without other TOD public funding available, early projects must utilize other funding resources, like local foundations or public-private partnerships. The eventual TRID value capture will then be used for future investments and to pay back the loans needed to secure development financing. Furthermore, funding multiple projects, as in East Liberty, creates an even larger increment with multiple developers, which complicates public approval for the allocation of public funds to cover the increment.

Redevelopment in East Liberty has been a complicated process involving many agencies. While still a work in progress, East Liberty has succeeded in using innovative financing tools to leverage \$903 million in development, and this development process continues despite weak local economic conditions.

CONCLUSION

Many cities across the US that were previously automobile-oriented are now building mass transit systems to address the problems of traffic congestion, poor air quality, and lifeless, blighted communities. Today many cities hope that new transit investments will stimulate transit-oriented development (TOD) and urban revitalization in addition to bringing improved mobility and environmental benefits. The fact that heavy rail metro systems are able to induce TOD has been seen and documented, yet until now no study had systematically examined the impacts of high-quality BRT or compared it to the development impacts of LRT and streetcars. As a result, BRT was often overlooked as an economic development tool.

In recent years, the US has improved the quality of BRT corridors built, with one silver-standard BRT and four bronze-standard BRTs currently in operation. Our study of some of these corridors shows that, under the right conditions, high-quality BRT can leverage as much or more economic development as LRT or streetcar systems can. But, because the BRT corridors are cheaper to build and operate, they leverage far more TOD investment per dollar of transit investment.

Several cities in the US — including Cleveland and Pittsburgh — are examples of best practice BRT transit-oriented development. These two cities, both facing serious economic difficulties and fiscal constraints as a result of deindustrialization, have used BRT investments as a cost-effective way to bring jobs, activity, and life back to their communities. As a growing number of municipalities find themselves short of funds to continue with LRT projects, these examples demonstrate the success of high-quality BRT as a mobility option and as an economic development lever. They also demonstrate the importance of choosing corridors with development potential, and of carefully targeted government interventions and planning for strategic TOD sites.

Any TOD effort is most successful when land-use planning and urban development efforts are concentrated around a high-quality mass transit corridor that serves land with inherent development potential. Assistance from regional and city-level agencies, community development corporations, and local stakeholders can help create more targeted policies to direct development to such transit corridors. Local foundations can be critical to the process of funding redevelopment and providing capital and equity for projects. Local NGOs, which can communicate the projects to the public to help broaden support, are also important.

Although cities in the US are still far from fully transforming their declined urban neighborhoods into high-quality, mixed-use urban developments, they are well on their way. Gold-, silver-, or bronze-standard BRT, when combined with institutional, financial, and planning support for TOD, is proving to be a cost-effective way of rebuilding our cities into more livable, transit-oriented communities.

The quaint By Ward Market neighborhood is right off Ottawa's Transitway, and one stop away from downtown.
FLICKR BY DUGSPR — HOME FOR GOOD



ACKNOWLEDGEMENTS

This report was made possible thanks to a generous grant from the Ford Foundation. It was also informed by previous research conducted as part of a larger program supported by the Rockefeller Foundation. Unless otherwise noted, the information contained in this report was obtained through interviews with staff from transit agencies, city planning and economic development departments, metropolitan planning organizations, redevelopment agencies, and community development corporations. We are thankful for their reflections and participation.

In the preparation of this report, one or more of the coauthors visited the following cities: Boston, Massachusetts; Charlotte, North Carolina; Cleveland, Ohio; Denver, Colorado; Eugene, Oregon; Las Vegas, Nevada; Los Angeles, California; Ottawa, Ontario, Canada; Pittsburgh, Pennsylvania; Portland, Oregon; and Seattle, Washington. The list of true BRT systems in the US is short, and we were able to visit all of them. We visited a comparable number of LRT and streetcar systems; however, time and resource limitations made it impossible to provide a more extensive review of the other cities that have implemented LRT and streetcar projects.

The authors are especially grateful to Joe Calabrese and Michael Schipper (Greater Cleveland Regional Transport Authority), Tracey Nichols (Cleveland Department of Economic Development), Robert Brown (Cleveland Department of City Planning), Skip Schwab (East Liberty Development, Inc.), David Wohlwill (Port Authority of Allegheny County), and India Pierce Lee (The Cleveland Foundation) for providing comments on sections of this report. The authors would also like to thank the numerous public officials, individuals, and non-governmental organizations that took the time to meet with us and discuss these issues.

The views in this report are those of the authors alone and do not necessarily reflect the views of ITDP or its funders.

Abhishek Dayal, Valley Metro (Phoenix, Arizona)	Matt Wickstrom, City of Portland Bureau of Planning and Sustainability (Portland, Oregon)
Alan Goodwin, Charlotte-Mecklenburg Planning Department (Charlotte, North Carolina)	Morgan Tracy, City of Portland Bureau of Planning and Sustainability (Portland, Oregon)
Alan Lehto, TriMet (Portland, Oregon)	Nadine Lee, Regional Transit District (Denver, Colorado)
Brian T. Welch, Regional Transit District (Denver, Colorado)	Patrick McLaughlin, Regional Transit District (Denver, Colorado)
Catherine Cox-Blair, Reconnecting America (Denver, Colorado)	Peter Skosey, Metropolitan Planning Council (Chicago, Illinois)
Chris Bongorno, University Circle, Inc. (Cleveland, Ohio)	Rob Stephany, The Heinz Endowments (Pittsburgh, Pennsylvania)
Colleen Connelly, OC Transpo (Ottawa, Ontario, Canada)	Ron Kilcoyne, Lane Transit District (Eugene, Oregon)
Daniel St. Clair, Spaulding & Slye Investments (Boston, Massachusetts)	Sam K. Gladstein, Newland Real Estate Group (Las Vegas, Nevada)
Danny O'Connor, Kansas City Area Transportation Authority (Kansas City, Missouri)	Sara King, Portland Development Commission (Portland, Oregon)
David Swallow, Regional Transportation Commission of Southern Nevada (Las Vegas, Nevada)	Sean Rathwell, McCormick Rankin (Ottawa, Ontario, Canada)
David Zucker, Zocalo Community Development (Denver, Colorado)	Hon. Sen. George Voinovich (R-OH)
Debbie Bischoff, City of Portland Bureau of Planning and Sustainability (Portland, Oregon)	Stephanie Pollack, Northeastern University (Boston, Massachusetts)
Flinn Fagg, City of Las Vegas Department of Planning (Las Vegas, Nevada)	Steve Iwata, City of Portland Bureau of Planning and Sustainability (Portland, Oregon)
Gayle Anderson, Los Angeles Metro (Los Angeles, California)	Tom Murphy, Senior Resident Fellow, ULI/Klingbeil Family Chair for Urban Development and former Mayor of Pittsburgh, PA (Pittsburgh, Pennsylvania)
Greg Strangeways, Massachusetts Bay Transportation Authority (Boston, Massachusetts)	Timothy G. Reardon, Metropolitan Area Planning Council (Boston, Massachusetts)
Jane Choi, Los Angeles Department of City Planning (Los Angeles, California)	Tina Votaw, Charlotte Area Transit System (CATS) (Charlotte, North Carolina)
Jeffrey Rosenblum, Livable Streets Alliance (Boston, Massachusetts)	Tom Schwetz, Lane Transit District (Eugene, Oregon)
Jennifer Effron, Washington Gateway Main Street (Boston, Massachusetts)	Tyler Bump, City of Portland Bureau of Planning and Sustainability (Portland, Oregon)
Jillian Detweiler, TriMet (Portland, Oregon)	William Arent, Economic and Urban Development, City of Las Vegas and Las Vegas Redevelopment Agency (Las Vegas, Nevada)
Jillian Savage, City of Ottawa Planning, Transit and the Environment (Ottawa, Ontario, Canada)	Zach Ware, Zappos (Las Vegas, Nevada)
Jim Haviland, MidTown Inc. (Cleveland, Ohio)	Zelleka Biermann, Neighborhood & Business Services, City of Charlotte (Charlotte, North Carolina)
Ken Zapinski, Allegheny Conference on Community Development (Pittsburgh, Pennsylvania)	
Kent Main, Charlotte-Mecklenburg Planning Department (Charlotte, North Carolina)	
Lena Andrews, ACTION-Housing (Pittsburgh, Pennsylvania)	

NOTES

1. The use of “transit-oriented development” or “TOD” in this report refers to any and all types of land development around transit corridors rather than to what is commonly recognized as TOD — “urban development projects that are located within walking distance of a high-capacity transit station and that present specific urban design and land use characteristics known to support, facilitate and prioritize the use of public transport, walking, cycling and other non-motorized modes.” Definition from The TOD Standard Version 1.0, Retrieved from: www.itdp.org/library/publications/the-tod-standard-draft.

2. Development data is very difficult to find, therefore we gathered as much information as was readily available to inform our analysis. All development data totalled is from the implementation of the transit service. The sources are: Portland MAX Blue Line LRT, Interview with Alan Lehto, TriMet, 2012; Cleveland HealthLine BRT, Interview with Tracey Nichols, Cleveland Department of Economic Development, 2012; Kansas City Main Street MAX, Downtown Council of Kansas City, Downtown Development Group (DDG) Executive Summary (January 2011); Portland Streetcar, Interview with Julie Gustafson, Portland Streetcar Inc, 2012; Seattle Salt Lake Union Streetcar, Interview with James Mueller, JC Mueller LLC, 2012; Phoenix Metro LRT, Interview with Abhishek Dayal, Valley Metro, 2012; Denver Central Corridor LRT, Interview with Aylene McCallum, Denver Downtown Partnership, 2012; Ottawa Transitway BRT, Interview with Ottawa Planning and Growth Management Department, 2012; Pittsburgh MLK Jr. East Busway BRT, Interview with David Wholwill, Port Authority of Allegheny County, 2012; Charlotte Lynx LRT, Interview with Tina Votaw, Charlotte Area Transit System (CATS), 2012; Los Angeles Orange Line BRT, Estimated development from Warner Center area development until 2012; Denver Southwest Corridor LRT, GB Arrington (2005) TOD in the US: The Experience with Light Rail, Parsons Brinkerhoff Planning & Transport Research Centre; Boston Washington Street Silver Line bus, Boston Redevelopment Agency, Retrieved from: <http://www.bostonredevelopmentauthority.org/planning/PlanningInitsIndividual.asp?action=ViewInit&InitID=124>; Eugene Emerald Express Green Line BRT, GAO (2012) BUS RAPID TRANSIT: Projects Improve Transit Service and Can Contribute to Economic Development; Las Vegas MAX, Interview with David Swallow, Regional Transportation Commission of Southern Nevada, 2012; Las Vegas Strip and Downtown Express BRT, Interview with Bill Arent, Las Vegas Redevelopment Agency, 2013; Ottawa O-Train LRT, Interview with Sean Rathwell, 2012; Pittsburgh “The T” LRT, Interview with David Wholwill, 2012; Pittsburgh West and South Busways, Interview with David Wholwill, 2012.

3. PricewaterhouseCoopers and Urban Land Institute, Emerging Trends in Real Estate 2013, 2013 pp. 10-11

4. New York City Department of Urban Planning, 2011

5. Cervero and Others, 2004. “Transit Oriented Development in America: Experiences, Challenges, and Prospects: Washington DC”. National Academies Press

6. Cervero, 1984; Cervero and Guerra, 1994; Bernick and Cervero, 1997; Autler and Belzer, 2002

7. Rabinovitch, J and J. Hoehn, “A Sustainable Urban Transportation System: the “Surface Metro” in Curitiba Brazil”, Working Paper, (The Environmental and Natural Resources Policy and Training Project, Michigan State University, No. 19, May 1995)

8. When considering new mass transit investments, cities should first focus on corridors that already have the highest levels of transit ridership. Normally this means building mass transit in corridors currently served by high frequency bus routes that experience delays due to congestion or other problems. Focusing investments on these corridors will benefit the greatest number of

people in the shortest amount of time. Further, since bus riders in the US tend to be predominantly low-income, concentrating investments where they will benefit current bus riders also tends to help many low-income people. Beginning on corridors with the highest existing transit ridership maximizes the time saved by poor families from the first day the system opens.

9. To calculate each transit system’s total cost, we used the U.S. government-provided Consumer Price Index (CPI) data to measure the purchasing power of the dollar over time. The formula we used is: 2010 USD = (Year of Expenditure)* CPI₂₀₁₀ / CPI(Year of Expenditure). The US government has been calculating the CPI since 1913. This calculator uses the yearly averages from the U.S. Bureau of Labor Statistics and when a full year of data is not available we use the latest month available in that year. Cost per mile is calculated using the total transit investment divided by the total miles of the corridor.

10. Finding any capital cost (or operating cost) is difficult to find. Our data is from the following sources: Ottawa, Interview with Colleen Connelly, OC Transpo, 2012 -The capital cost data for the Transitway is reflective of the entire transit system, as corridor-by-corridor data is not readily available; Cleveland: Interview with Michael Schipper, Greater Cleveland Regional Transit Authority, 2012; Las Vegas, Interview with David Swallow, Regional Transportation Commission of Southern Nevada, 2012; Pittsburgh, Interview with David Wohlwill, Port Authority of Allegheny County, 2012; Eugene, Interview with Tom Schultz, Lane Transit District, 2012; Boston, Interview with Greg Strangeways, MBTA, 2012; Portland: Interview with Jillian Detweiler, TriMet, 2012; Phoenix, Interview with Abhishek Dayal, Valley Metro, 2012; Charlotte: Interview with Tina Votaw, Charlotte Area Transit System (CATS), 2012; Denver: Interview with Nadine Lee, Regional Transit District, 2012; Los Angeles: Interview with Gayle Anderson, Metro, 2012.

11. Tom Parkinson and Ian Fisher Rail Transit Capacity, Transportation Research Board, http://nrc40.nas.edu/news/blurb_detail.asp?id=2603

12. Speed data is from the following sources: Ottawa, Interview with Colleen Connelly, OC Transpo, 2012; Cleveland: Interview with Michael Schipper, Greater Cleveland Regional Transit Authority, 2012; Las Vegas, ITDP, Recapturing Global Leadership in Bus Rapid Transit, 2011; Pittsburgh, Interview with David Wohlwill, Port Authority of Allegheny County, 2012; Eugene, Interview with Tom Schultz, Lane Transit District, 2012; Boston, ITDP, Recapturing Global Leadership in Bus Rapid Transit, 2011; Portland: Interview with Jillian Detweiler, TriMet, 2012; Phoenix, Interview with Abhishek Dayal, Valley Metro, 2012; Charlotte: Interview with Tina Votaw, Charlotte Area Transit System (CATS), 2012; Los Angeles: Interview with Gayle Anderson, Metro, 2012; Kansas City: Interview with Randy Stout, Kansas City Area Transportation Authority, 2013

13. Ridership is from the following sources: Ottawa, Interview with Colleen Connelly, OC Transpo, 2012- The ridership data for the Transitway is reflective of the entire transit system, as corridor-by-corridor data is not readily available; Cleveland: Interview with Michael Schipper, Greater Cleveland Regional Transit Authority, 2012; Las Vegas, ITDP, Recapturing Global Leadership in Bus Rapid Transit, 2011; Pittsburgh, Interview with David Wohlwill, Port Authority of Allegheny County, 2012; Eugene, Interview with Tom Schultz, Lane Transit District, 2012; Boston, Interview with Greg Strangeways, MBTA, 2012; Portland: Interview with Jillian Detweiler, TriMet, 2012; Phoenix, Interview with Abhishek Dayal, Valley Metro, 2012; Charlotte: Interview with Tina Votaw, Charlotte Area Transit System (CATS), 2012; Los Angeles: Interview with Gayle Anderson, Metro, 2012; Kansas City: Interview with Randy Stout, Kansas City Area Transit Authority, 2013; Budapest: Interview with Gergely Nitsch, One Planet Engineering Ltd, 2013. Denver ridership is determined via daily boarding and alighting at

- the stations along the corridor (from Brian Welsh at RTD, 2012). For the Central Valley LRT the stations included are 30th Ave – Downing, 29th – Welton, 27- Welton, 25 – Welton, 19th-Stout, 16th-Stout, Convention Center, Colfax at Auraria, 10th-Osage, Alameda. For the SouthWest Corridor, stations included are Evans, Englewood, Oxford, Littleton/Downtown, Littleton/Mineral.
14. United Nations Framework Convention on Climate Change, Clean Development Mechanism http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php
 15. The Institute for Transportation and Development Policy, *The BRT Standard*, Version 1.0, www.brtstandard.org
 16. *ibid*
 17. *ibid*
 18. A BRT that scores below bronze is either considered 'Basic BRT' or 'not BRT,' depending on whether it includes the basic elements. In this case, all of the BRTs that scored below bronze are considered 'not BRT.'
 19. TCRP Synthesis 86, Relationships Between Streetcars and the Built Environment, p.4
 20. *ibid*
 21. PriceWaterhouseCoopers, *Emerging Trends In Real Estate 2013*
 22. Center for Transit Oriented Development, Portland Metro's TOD Strategic Plan: *Chapter 3, Regional Framework for TOD Investments*, 2011
 23. Interview with Peter Skosey, Metropolitan Planning Council, 2012.
 24. Center for Transit Oriented Development, *Portland Metro's TOD Strategic Plan*, 2011
 25. Glaeser and Gottleib, *The Wealth of Cities: Agglomeration Economies and Spatial Equilibrium in the United States*, NBER Working Paper No. 14806, March 2009
 26. Institute for Transportation and Development Policy (2012), *The Life and Death of Urban Highways*, Retrieved from: http://www.itdp.org/documents/LifeandDeathofUrbanHighways_031312.pdf
 27. Project for Public Spaces, *The Global Waterfront Renaissance* Retrieved from: <http://www.pps.org/reference/theglobalwaterfrontrenaissance/>
 28. LeCorbusier's dream of 'towers in the park' when brought to the US translated into 'towers in the parking lot' according to urban historian Kenneth Jackson.
 29. Florida, Richard, *The Rise of the Creative Class*, HarperBusiness, 2005
 30. Scola (2012), *Ace in the Allegheny*, *The Next American City*, Retrieved from: <http://nextcity.org/forefront/view/ace-in-the-allegheny>
 31. The California Redevelopment Association was another example of a state-level redevelopment authority. This authority supported numerous local redevelopment authorities, but all of these entities were recently abolished by the State of California. The State claimed that it was losing too much income to local TIFs and was going into unsustainable levels of state debt, in its attempt to maintain funding to schools. The disbanding of all of California's redevelopment authorities has been a significant setback for TOD in California's cities.
 32. The State of Massachusetts, *How To Organize A Redevelopment Authority*, Retrieved from: <http://www.mass.gov/hed/docs/dhcd/cd/ur/howtora.pdf>
 33. In 1993, the State approved Act 1993-77, which created the Allegheny Regional Asset District intended to support civic, recreational, library, sports, cultural and other regional assets. The act authorized the implementation of a sales tax on tangible personal property and services to fund the district. A portion of these funds, the RAD tax, is also distributed to the county, city and other municipalities in the county after the reduction of certain taxes.
 34. Walker, Christopher (2002), *Community Development Corporations and their Changing Support Systems*, The Urban Institute, Retrieved from: http://www.urban.org/uploadedPDF/310638_ChangingSupportSystems.pdf
 35. Kohler, Scott *Bedford-Stuyvesant and the Rise of the Community Development Corporation*, Retrieved from: <http://cspcs.sanford.duke.edu/sites/default/files/descriptive/bedford-stuyvesant.pdf>
 36. Teltsch, Kathleen, "FOUNDATION HELPS RENEW CITY AREAS," Retrieved from: <http://www.nytimes.com/1986/12/07/us/foundation-helps-renew-city-areas.html>
 37. Kohler, Scott *Local Initiatives Support Corporation*, Retrieved from: http://cspcs.sanford.duke.edu/sites/default/files/descriptive/local_initiatives_support_corporation.pdf
 38. Lowe, Jeffrey (2008), *Limitations of community development partnerships: Cleveland, Ohio and Neighborhood Progress Inc*, Retrieved from: <http://www.arch.columbia.edu/files/gsap/imeshared/JLowe-Cities.pdf>
 39. Retrieved from: [http://www.lisc.org/phoenix/what_we_do/transit_oriented_development_\(tod\).php](http://www.lisc.org/phoenix/what_we_do/transit_oriented_development_(tod).php)
 40. Retrieved from: <http://www.sustainablecommunitiescollaborative.com/our-accomplishments/>
 41. Lowe, Jeffrey (2008), *Limitations of community development partnerships: Cleveland, Ohio and Neighborhood Progress Inc*, Retrieved from: <http://www.arch.columbia.edu/files/gsap/imeshared/JLowe-Cities.pdf>
 42. City of Charlotte Planning Department, *Centers, Corridors, and Wedges*, Adopted 2010
 43. City of Portland, *Comprehensive Plan Goals and Policies*, Adopted November 2011
 44. Eugene, Springfield, and Lane County, *Eugene-Springfield Metropolitan Area General Plan: Transportation Element*, Adopted 2004, Updated 2010
 45. Cleveland City Planning Commission, *Connecting Cleveland 2020*, Adopted 2007
 46. MidTown Cleveland Inc, *Beyond 2005: A Vision for MidTown Cleveland*, Adopted 2005
 47. City of Los Angeles Department of City Planning, *General Plan Framework: Transportation Element*, Adopted 1999
 48. Interview with Jane Choi, Los Angeles City Planning Commission, July 2012
 49. City of Ottawa, *Official Plan: A Component of Ottawa 2020*, Adopted 2003
 50. East Liberty Development Inc, *A Vision for East Liberty*, 1999
 51. Portland Development Commission, *Pearl District Development Plan: A Future Vision for a Neighborhood in Transition*, Adopted 2001
 52. Newberg, Sam, *Light Rail in Charlotte*, Urban Land Magazine: July 2009

53. White, S.M and J. McDaniel (1999)
54. City of Ottawa, Maximum Limit on Number of Parking Spaces Near Rapid Transit Stations, Retrieved on July 31, 2013, <http://ottawa.ca/en/residents/laws-licenses-and-permits/laws/city-ottawa-zoning-law/zoning-law-2008-250-consolidation-40>
55. Denver uses form-based code as opposed to Euclidean zoning. Unlike Euclidean zoning, which segregates land use types, form-based code focuses on the physical form of buildings, streetscapes and the like. Form-based code addresses the relationship between buildings and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. The regulations and standards in form-based codes are presented as clearly drawn diagrams and other visuals, showing the exact form(s) allowed in certain areas.
56. Interview with Daniel St. Clair, ULI
57. Cervero, Robert, *Transit Oriented Development in America: Contemporary Practices, Impacts, and Policy Directions* 2004 pp.5
58. City of Seattle, Office of Housing, Retrieved on July 31, 2013, http://www.seattle.gov/housing/incentives/residential_bonus.htm
59. Holmes, *Director's Report: Zoning Changes for the South Lake Union Urban Center*, 2012 pp 26
60. Holmes, *Director's Report: Zoning Changes for the South Lake Union Urban Center*, 2012 pp 30
61. Ibid.
62. Portland Housing Bureau, Tax Increment Financing (TIF) Set-Aside Policy for Affordable Housing, Retrieved July 31, 2013 from: <http://www.portlandoregon.gov/phb/60811>
63. City of Portland, Tax Increment Financing Set Aside for Affordable Housing Policy Implementation Plan (2011), <http://efiles.portlandoregon.gov/webdrawer/rec/4592422/view/TIF%20Set%20Aside%20Ordinance%20Packet%202011%20Policy%20Review.PDF>
64. See "Section 108 Loan Guarantee Program," U.S. Housing and Urban Development website. http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/108
65. US Department of Housing and Urban Development, *Vice President Gore Announces Cleveland's Designation as an Empowerment Zone*, <http://archives.hud.gov/>
66. Retrieved from: http://sas70.reznickgroup.com/sites/reznickgroup.com/files/rg1011_bro_financing_through_hud.pdf
67. Dittmar H & Poticha S (2004), 'Defining Transit-Oriented Development: The New Regional Building Block' in Dittmar H & Ohland G (2004), 'The New Transit Town: Best Practices in Transit Oriented Development,' Island Press from Currie, Graham, 'Strengths and Weakness of Bus in Relation to Transit Oriented Development'
68. Estupinan, N. & Rodriguez, D.A. (2008), 'The relationship between urban form and station boardings for Bogota's BRT'. *Transportation Research Part A – Policy and Practice*, 42(2), 296-306
69. RTD FasTracks, Transit-Oriented Development 2012 Status Report: http://www.rtd-fastracks.com/media/uploads/main/RTD_2012_Annual_TOD_Status_Report.pdf
70. City of Denver, *Blueprint Denver: An Integrated Land Use and Transportation Plan*, adopted 2002
71. City of Englewood, *Project Overview: CityCenter Englewood*, <http://www.engagewoodgov.org/home/showdocument?id=662>
72. City of Eugene, *Urban Renewal Projects*, <http://www.eugene-or.gov/index.aspx?nid=1952>
73. City of Eugene, *Downtown Loan Revitalization Fund*, <http://www.eugene-or.gov/index.aspx?nid=1402>
74. City of Eugene, *Vertical Housing Development Zone*, <http://www.eugene-or.gov/index.aspx?NID=1403>
75. Joel Epstein, Streetsblog LA, Los Angeles and the Case for Transit-Oriented Development, May 23, 2012.
76. Orange Line Bus Rapid Transit Sustainable Corridor Implementation Plan, June 29, 2012: <http://www.reconnectingamerica.org/assets/Uploads/2010629OrangeLineCIPFinalReport.pdf>
77. Orange Line Bus Rapid Transit Sustainable Corridor Implementation Plan, June 29, 2012: <http://www.reconnectingamerica.org/assets/Uploads/20120629OrangeLineCIPFinalReport.pdf>
78. City of Denver, *Transit-Oriented Development Strategic Plan*, 2006
79. <http://www.downtowndenver.com/about-the-bid/>
80. Downtown Council of Kansas City, Downtown Development Group, Executive Summary, <http://www.downtownkc.org/wp-content/uploads/2010/07/Downtown-Development-Group-Jan-2011.pdf>
81. The \$20.97 observed for the Boston Washington St corridor was by all accounts difficult to attribute to the transit investment.
82. It was difficult to attribute these development impacts to the transit investments themselves, given the Strong land potential that the corridors ran through.
83. The projected cost of an LRT on the Euclid Avenue corridor in Cleveland was \$800 million when they decided to develop BRT instead. The BRT cost \$50 million but the related street improvements, other infrastructure upgrading, and burying of power lines cost around \$200 million. As we don't have a detailed cost breakdown on the LRT proposal, we are not sure what non-transit investments might also have been included in the LRT cost estimate
84. Reconnecting America, *Midsized Cities on the Move*, 2012, pp. 33
85. Of the corridors studied in this report
86. Positively Cleveland Conception and Visitors Bureau. *Cleveland Plus History*. 2013. <http://www.positivelycleveland.com/visit/cleveland-history/> (accessed June 5, 2013)
87. Fogarty, Michael S., Gasper S. Garofalo, and David C. Hammack. *Cleveland from Startup to the Present: Innovation and Entrepreneurship in the 19th and Early 20th Century*. Cleveland: Center for Regional Economic Issues, Weatherhead School of Management, Case Western Reserve University
88. Atkins, Patricia, et al. *Responding to Manufacturing Job Loss: What Can Economic Development Policy Do?*, Washington DC: Brookings Institution Metropolitan Policy Program, 2011

89. City-Data. Cleveland: Population Profile. 2009. <http://www.city-data.com/us-cities/The-Midwest/Cleveland-Population-Profile.html> (accessed June 5, 2013)
90. Ellis, Josh. *The Connector*. July 21, 2011. <http://www.metroplanning.org/news-events/blog-post/6203> (accessed June 5, 2013)
91. Partnership for Sustainable Communities. "Transit and Transformation: The Euclid Corridor in Cleveland." June 2012
92. Greater Cleveland Regional Transit Authority. *RTA HealthLine: Fact Sheet*. <http://www.rtahealthline.com/healthline-what-is.asp> (accessed June 5, 2013)
93. *Listing of Community Development Corporations*. <http://www.livecleveland.org/node/10> (accessed June 5, 2013)
94. MidTown Cleveland. *2012 Annual Report*. Cleveland: MidTown Cleveland, 2012
95. *City Planning Commission Approves MidTown Cleveland, Inc. Master Plan*. February 11, 2005. <http://www.midtowncleveland.org/news-archives.aspx?newsid=14> (accessed June 5, 2013)
96. MidTown Cleveland. *30 Years of Historical Advancement*. <http://www.midtowncleveland.org/timeline-viewall.aspx> (accessed June 5, 2013)
97. "Cleveland Health and Technology Corridor: Action Plan." Angelou Economics, 2009
98. "Cleveland's MidTown Tech Park Announces First Tenant." Cleveland: JumpStart, November 9, 2010
99. Clean Ohio Fund. *Brownfield Revitalization*. <http://www.clean.ohio.gov/brownfieldrevitalization/> (accessed June 5, 2013)
100. Ohio Development Services Agency. *Job Ready Sites*. http://development.ohio.gov/redev/JRS_funding.htm (accessed June 5, 2013)
101. Ohio Department of Development. "Ohio Job Ready Sites Program: Revised Program Guidelines and Application Process." Office of Redevelopment, Ohio Department of Development, Columbus, 2011
102. City of Cleveland. *Block Grant Program*. <http://www.city.cleveland.oh.us/CityofCleveland/Home/Government/CityAgencies/CommunityDevelopment/BlockGrantProgram> (accessed June 5, 2013)
103. US Department of Housing and Urban Development, Section 108 Loan Guarantee Program, https://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/108
104. The Foundation Center. "Spotlight on Economic Development Grantmaking in Ohio." Ohio: The Foundation Center, March 2011
105. *Renovation Expansion Project Overview*. <http://www.clevelandart.org/support/support-the-transformation/renovation-expansion-project/overview> (accessed June 5, 2013)
106. "How Local Purchasing Spurred Growth in West Philly." Initiative for a Competitive Inner City. Philadelphia, February 24, 2012
107. Litt, Steven, "Living Cities to award \$14.75 million to Cleveland to boost redevelopment effort masterminded by Cleveland Foundation". October 28, 2010
108. This program allows land owners to clean up a piece of property according to specific standards developed by Ohio EPA and when cleanup requirements are met, the director of Ohio EPA issues a covenant not to sue. This covenant protects the property owner or operator and future owners from being legally responsible to the State of Ohio for further investigation and cleanup.
109. Bullard, Stan. "Midtown project attempt to 'resettle' city: Without committed tenants, Geis' planned \$20M Euclid Tech Center will require unique financing." *Crain's Cleveland Business*, June 21, 2010.
110. *ibid.*
111. Atassi, Leila. "What to do with vacant homes is a Cleveland quandary." *The Plain Dealer*, February 3, 2013
112. Reported by Geis when they bought the land for MidTown Tech Park
113. Pittsburgh Partnership for Neighborhood Development, *The East End Growth Fund: A Model of Market Transformation*, December 2008
114. Interview with Rob Stephany, Director, Community and Economic Development, Heinz Endowments, May 2013
115. Interview with Rob Stephany, Director, Community Community and Economic Development, Heinz Endowments, May 2013
116. In 1993, the State approved Act 1993-77, which created the Allegheny Regional Asset District intended to support civic, recreational, library, sports, cultural and other regional assets. The act authorized the implementation of a sales tax on tangible personal property and services to fund the district. A portion of these funds, the RAD tax, is also distributed to the county, city and other municipalities in the county after the reduction of certain taxes.
117. The Mayor of Atlanta knew the Atlanta-based Home Depot cofounder Marcus, who was very active with Jewish philanthropies.
118. Grants
119. Subordinated funds are the investments which are ranked after other loans or debts, and typically paid out after other debts have been paid.
120. Pittsburgh Partnership for Neighborhood Development, "The East End Growth Fund: A Model of Market Transformation," December 2008
121. Reconnecting America, "Evaluating Transit Revitalization Investment Districts In Pennsylvania," August 29, 2011. <http://www.reconnectingamerica.org/news-center/reconnecting-america-news/2011evaluating-transit-revitalization-investment-districts-in-pennsylvania/>
122. CTOD, TRID Opportunities and Challenges for Implementation, July 2011
123. Pittsburgh Department of City Planning, East Liberty TRID Study, 2011