

Illinois Terminal Benefit Cost Analysis

July 2019

Illinois Terminal: Benefit-Cost Analysis 2019

Prepared for:

Champaign-Urbana Mass Transit District



Smart Growth America empowers communities through technical assistance, advocacy, and thought leadership to create livable places, healthy people, and shared prosperity.

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Executive Summary

Smart Growth America conducted a formal benefit-cost analysis (BCA) of improvement and expansion of the Illinois Terminal, an intermodal bus and passenger rail facility in Champaign, IL. This BCA constitutes an update from BCAs previously conducted in support of a 2017 TIGER application and a 2018 BUILD application.

The Champaign-Urbana Mass Transit District's (MTD) project, known as The Yards, involves public and private sector participation and includes interior renovation of the existing Illinois Terminal facility, expansion of the facility, construction of rural and intercity bus platforms, front entrance drive improvements, addition of green space, expansion of MTD bus platform space, and construction of a mixed-use facility.

Utilizing BCA standards established by the U.S. Department of Transportation, this analysis assesses the improvements to Illinois Terminal, which would enhance bus operations, improve safety, and create significant real estate value. This BCA does so using a 7 percent real discount rate.

The total **present value benefits are \$65.3 million** from 2023, the start of project operations, to 2042, the end of a 20-year analysis period. The benefits include travel time savings for existing bus riders, generalized cost benefits for induced bus riders, reductions in injury crashes and property damage only crashes at local intersections, and increases in real estate property value. They also include a residual value. These benefits are outlined in Table 1 below.

Table 1. Cumulative Benefits, 2023 to 2042, Present Value 2018 \$

Benefit Category	Value
Travel Time Savings - Existing Riders	\$11,738,873
Generalized Cost Savings - Induced Riders	\$160,479
Safety Benefits	\$307,066
Real Estate Property Value Creation - Office	\$39,491,964
Real Estate Property Value Creation - Retail	\$4,904,840
Residual Value	\$8,647,836
Total Benefits	\$65,251,059

Source: Smart Growth America, 2019

Secondly, Table 2 outlines the cumulative project costs, which total \$56.3 million. This includes capital costs, but excludes O&M costs. As discussed later in this analysis, O&M costs are already "netted out" of the real estate property value creation.

Table 2 Cumulative Costs, 2019 to 2040, Present Value 2018 \$

Category	Value (2018 \$ PV)
Capital Costs	\$56,320,250
O&M Costs	-
Total Costs	\$56,320,250

Source: Smart Growth America, 2019

Note: O&M Costs excluded because they are capitalized out of property value creation. See "Real Estate Property Value Creation" for discussion.

The results show that Illinois Terminal has a **benefit-cost ratio of 1.16** using a 7 percent real discount rate. This means that the project benefits exceed project costs and have a net present value of \$8.9 million over the 20-year analysis period. Table 3 below outlines these results

The benefits are summarized per U.S. DOT standards in the Project Benefits Matrix in Table 4. This BCA finds that the benefits of the Illinois Terminal project exceed the project costs through 2042.

Table 3Summary of Benefit Cost Analysis Metrics

Category	Value
Discount Rate	7%
Benefit-Cost Ratio	1.16
Net Present Value	\$8,930,808
Economic Rate of Return	10.3%
Break-Even Year	2042

Table 4 Project Benefits Matrix

Current Status	Change to Baseline	Type of Impacts	Population Affected by	Economic Benefit	Summary of Results	Page Reference
			Impacts			in BCA
Limited bus	Improved bus	Reduction in	Bus riders who	\$11.7	Estimated dollar value of	7
capacity at Illinois	capacity	travel times for	use Illinois		time savings for existing	
Terminal.		existing bus riders	Terminal under		bus riders.	
		at Illinois	existing			
		Terminal.	conditions.			
		Generalized cost	Induced bus	\$0.16 mil.	Estimated dollar value of	8
		benefits for new	riders at Illinois		generalized cost savings	
		(induced) bus	Terminal.		for induced riders using	
		riders at Illinois			"rule of half."	
		Terminal.				
Unsafe conditions	Improved safety	Reduced injury	All of society;	\$0.31 mil.	Estimated dollar value of	10
at local	conditions at 2	and property	individuals who		reduced injury and	
intersections.	intersections that	crashes.	are impacted by		property damage crashes	
	would eliminate		safety savings.		tied to safety	
	crashes.				improvements.	
Existing level of	Additional office	Direct property	MTD and	\$44.4 mil.	Estimated market value of	12
property value.	and retail property	value creation in	developers who		office and retail property	
	value created.	office and retail	own the real		given lease rates,	
		space at the	estate.		capitalization rates, and	
		facility.			vacancy rates.	
Existing facility	New residual	Residual value	MTD	\$8.6 mil.	Estimate of residual value	15
value	value by 2042				at end of analysis period.	

Overview

Introduction

SGA prepared this report as a benefit-cost analysis (BCA) in support of the Champaign-Urbana Mass Transit District's (MTD) U.S. Department of Transportation 2019 BUILD discretionary grant application. As such, this report complies with the BCA standards set forth by the U.S. DOT *Benefit-Cost Analysis Guidance for Discretionary Grant Programs*.¹

MTD is in need of expansion to its downtown intermodal facility, Illinois Terminal. This need is aligned with private and public interest in development of this area. MTD seeks to participate in a joint development, in partnership with a private developer and the City on The Yards. This partnership will produce the largest single investment into the area by expanding the Terminal, building a hotel, residential, office, retail, arena, and parking.

MTD's multimodal facility, Illinois Terminal, is the primary intermodal transportation hub for the region, serving the cities of Champaign, Urbana, Savoy, as well as the University of Illinois at Urbana-Champaign (UIUC) and the County. It is located in Champaign, Illinois between the Downtown Champaign District and the Midtown Champaign District. Frequent public transit service connects the two city centers with daytime, evening, and weekend service.

Illinois Terminal is a true multimodal facility, served by one local bus provider, MTD; four intercity bus providers; two rural transit providers; and Amtrak. The terminal has a taxi stand served by approximately 38 taxi companies and parking for 70 bicycles. The terminal also contains office space that is leased to tenants, which pays for the entire local share of the building operational costs. MTD's passenger facilities in this location are insufficient for their current use. This project will address an unmet need for capital investment, while enhancing the safety and operations of the facility for transit vehicle operators, riders, and the public.

The project is integrally related to and co-located with commercial, residential, and mixed-use. The most advantageous method of carrying out the transit expansion is through a partnership with public and private development through new construction

¹ U.S. Department of Transportation (2018). Benefit-Cost Analysis Analyses Guidance for Discretionary Grant Programs. https://www.transportation.gov/sites/dot.gov/files/docs/mission/office-policy/transportation-policy/284031/benefit-cost-analysis-guidance-2018_0.pdf

and expansion. Adjacent development plans include retail, hotel (200 keys) and conference center (1,000 seats), parking, and office (over 170,000 sq ft). The developer has proposed to the University of Illinois Division of Intercollegiate Athletics a 5,000-seat hockey and event center to also accommodate women's basketball, women's volleyball, wrestling, men's and women's gymnastics, and a public skating rink. Plans include numerous community opportunities for youth athletics that do not currently exist in the community.

MTD will partner with a local developer to incorporate the transit facility expansion with a larger development project. This project will generate revenue for MTD through income derived from rental/lease payments as well as leverage private sector contributions to public infrastructure. Partners will benefit from shared costs, efficient land use, reduced distance between transportation and other activities, economic development, increased transit ridership, and improved transit connectivity.

MTD's impact assessment indicates an additional 147,400 public transit trips due to activity associated with the arena, conference center, residential, office, retail, and hotel.

Stop activity at Illinois Terminal is forecasted to increase as much as 16.9% during the most event-heavy month, solely due to the joint development. This project will improve the reliability of the transit service. Expansion will accommodate 23 buses, greatly improving schedule adherence and allowing for vehicles to safely and efficiently navigate through the area. Buses will no longer be obstructed waiting behind other buses. The ability to accommodate additional buses will also avoid obstruction of public streets, improving reliability for all vehicular traffic.

Scenario Definitions

No-Build

The baseline No-Build alternative is a continuation of the Illinois Terminal under its existing conditions, without improvements to bus facilities, safety improvements to surrounding intersections, or the creation of retail and office space.

Build

In the Build alternative, the Illinois Terminal will be expanded and improved in three fundamental ways for the purposes of this analysis.

- First, the expansion will accommodate 23 buses, which improves schedule time, and subsequently passenger travel times.
- Secondly, the project provides improvements to surrounding streets and intersections, which would improve safety conditions.
- Finally, the project creates over 170,000 square feet of leasable office and retail space, creating new real estate value in the Champaign-Urbana region.

Operating Assumptions

This report complies with BCA standards specified by the U.S. DOT in the Benefit-Cost Analysis Guidance for Discretionary Grant Applications.² All recommended values in the U.S. DOT guidance have been updated to real 2018 dollars using GDP price deflators.³

Smart Growth America (SGA) conducted this analysis using a customized Microsoft Excel spreadsheet model, and utilizes the assumptions and methods outlined throughout this report. This BCA makes the following general assumptions:

- The total analysis period includes 23 years, consisting of a 26-month construction period, and a 20-year operations period.
- Nov. 2020 Dec. 2022: Design and construction
- 2023-2042: Operations for BCA analysis purposes are assumed to start in 2023 for a 20-year analysis period through 2042.
- The real discount rate used in this analysis is 7 percent, consistent with U.S. DOT recommendations for a BCA.
- The financial base year of this analysis is 2018. Dollars are expressed in constant 2018 dollars. When discounted, dollars are discounted to 2018 using a real discount rate of 7 percent.

https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=3&isuri=1&nipa_table_list=13&categories=survey

² U.S. Department of Transportation (2018). Benefit-Cost Analysis Analyses Guidance for Discretionary Grant Programs. https://www.transportation.gov/sites/dot.gov/files/docs/mission/office-policy/transportation-policy/284031/benefit-cost-analysis-guidance-2018_0.pdf

³ U.S. Bureau of Economic Analysis. National Income and Product Accounts Table 1.1.9 Implicit Price Deflators for Gross Domestic Product.

Transportation Modeling

MTD provided bus ridership forecasts for the No-Build and Build alternatives, and did so for four model years of 2016, 2021, 2026, and 2036. As Table 5 shows, total bus **ridership at Illinois Terminal is expected to increase by 81,675 riders a year by 2036, or an increase of 4.2 percent.** Much of the difference in the ridership, furthermore, begins to increase in 2026. Figure 1 illustrates this difference in ridership.

2,150,000 2.100.000 2,050,000 2,000,000 1,950,000 1,900,000 1,850,000 1,800,000 1,750,000 2023 2024 2025 2026 2028 2029 2030 2032 2033 2034 2035 2036 2037 2038 2039 2039 2040 2041 2042 2027 2031 ---- No Build Riderhip ----- Build Ridership

Figure 1 Annual Bus Ridership Illinois Terminal by Year, 2023-2042

Source: Smart Growth America, 2019; MTD, 2018

Table 5Annual Bus Ridership Projections

Annual Bus Ridership	2016	2021	2026	2036
		No-Build		
Weekday	1,299,405	1,356,573	1,348,999	1,396,070
Weekend	517,340	541,258	537,980	557,023
Total	1,816,745	1,897,832	1,886,979	1,953,092
		Build		
Weekday	1,299,405	1,369,362	1,370,121	1,458,953
Weekend	517,340	545,080	544,293	575,815
Total	1,816,745	1,914,443	1,914,414	2,034,768
Change				
Weekday	-	12,789	21,123	62,883
Weekend	-	3,822	6,313	18,793
Total	-	16,611	27,435	81,675
Percent Change				
Weekday	0.0%	0.9%	1.6%	4.5%
Weekend	0.0%	0.7%	1.2%	3.4%
Total	0.0%	0.9%	1.5%	4.2%

Source: Smart Growth America, 2019; MTD, 2018

Benefits

Benefits in a BCA stem from the idea that different people or entities receive utility from the project. For BCA purposes, it is important to identify these benefits over the life-cycle of a project, which for this BCA is 20 years from 2023 to 2042.

All dollar amounts are expressed in 2018 present value dollars (2018 \$ PV) using a 7 percent discount rate.

This analysis identifies the U.S. DOT strategic goal that the benefit falls under, as well as the incidence of the benefit (the population affected by the impacts).

The five U.S. DOT strategic goals are:

- 1) Safety
- 2) State of Good Repair
- 3) Economic Competitiveness
- 4) Livable Communities and
- 5) Environmental Sustainability

A benefit can fall in one or many of these categories.

The incidence of the benefit can fall on either private beneficiaries (specific private individuals, private firms) or public beneficiaries (the public at large, government entities). Thus, the type of benefit depends on the population or entities affected by the impacts. It is possible for a benefit to fall on a mix of populations, and for it to be both a private and a public benefit.

Travel Time Savings – Existing Bus Riders

The improved Illinois Terminal will provide travel time benefits to existing riders due to the improved flow of buses with expanded bus bays. This keeps buses on schedule and reduces delays for transfers at Illinois Terminal.

This analysis assumes an average travel time savings of 3.0 minutes per bus passenger⁴ that uses Illinois Terminal under the No-Build conditions. Furthermore, this analysis uses a value of time of \$15.13 prescribed by the U.S. DOT.⁵

Applying these travel time savings to the existing (No-Build) ridership in the travel demand forecasting discussed above, over the 20-year analysis period, this amounts to **1.93 million person-hours of travel** time savings, or an average of 96,633 person-hours per year.

These benefits are a **public benefit** experienced by all bus users who use Illinois Terminal. As time benefits, they fall under the U.S. DOT strategic goal of **Economic Competitiveness**.

Travel Time Savings – Existing Bus Riders

DOT Goal: Economic Competitiveness

Benefit Incidence: Public benefit; bus users who use Illinois-Terminal.

20-year Benefit: 1.60 million person-hours of travel time savings

20-Year Value: \$11.7 million

Average per year: \$586,944

This **benefit totals \$11.7 million** over the 20-year period (2018 \$ PV), or an average of \$586,944 per year.

⁴ Assumption from Champaign-Urbana Mass Transit District, July 2019.

⁵ U.S. Department of Transportation (2018). Benefit-Cost Analysis Analyses Guidance for Discretionary Grant Programs. https://www.transportation.gov/sites/dot.gov/files/docs/mission/office-policy/transportation-policy/284031/benefit-cost-analysis-guidance-2018_0.pdf

Generalized Cost Savings –Induced Bus Riders

The improved Illinois Terminal will increase ridership, and the benefits of these induced passengers can be calculated using the "rule of half", which is a concept of a change in generalized costs.

By 2040, the MTD ridership forecasts estimate an additional 104,820 annual riders in the Build scenario, or an increase of about 5 percent relative to the No-Build scenario. Over 20-years, there would be **1.2 million additional bus trips** in the Build scenario.

Using the previous travel-time based estimates, this analysis estimates a monetized travel savings of \$0.76 per passenger for existing riders. Thus, this can be viewed as a change in the "generalized costs," or total price of riding pursuant to a demand curve.

Generalized Cost Savings – Induced Bus Riders

DOT Goal: Economic Competitiveness

Benefit Incidence: Private benefit; transit users who will be induced to use Illinois-Terminal.

20-year Benefit: 1.2 mil. additional bus trips with a generalized cost benefit.

20-Year Value: \$160,479

Average per year: \$8,024

Figure 2 below illustrates a basic transit ridership

demand curve. The movement from GC1 to GC2 indicates a reduction in generalized costs, which increases ridership from q1 to q2.

We estimated the change from GC1 to GC2 is \$0.76 per rider, according to the travel time savings calculations in the previous section (using \$15.13 per hour value of time and 3.0 minutes of travel time savings per rider). The rectangle A illustrates the benefit (change in consumer surplus) from travel time savings.

To estimate the generalized cost savings for *induced riders*, we must calculate triangle B. We also know the change in ridership in a given year, or the movement from q1 to q2. In 2040, this change in ridership is 104,820 riders. Multiplying 0.5 times the change in ridership times the change in cost yields this triangle, or the benefit to induced riders.

These benefits are a **public benefit** experienced by new bus users who use Illinois Terminal. As generalized economic benefits, they are part of the U.S. DOT strategic goal of **Economic Competitiveness**.

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This **benefit totals \$160,479** over the 20-year period (2018 \$ PV), or an average of \$8,024 per year.

Figure 2

Illustration of Ridership Demand and Consumer Surplus for Induced Riders



Source: Smart Growth America, 2019

Safety Savings

The improved Illinois Terminal will eliminate accidents in the surrounding intersections as pedestrians will no longer have to cross the area, and other improvements will prevent car crashes. Particularly, the intersections being improved at Neil and Clark, and Walnut and Logan.

MTD indicates that for the 15 years from 2004 to 2018, 76 crashes that involved MTD buses.⁶ Of those, 3 involved a bike, 1 involved a pedestrian, and the remaining involved MTD buses (17 with fixed objects and 55 with other vehicles).

Of the 76 crashes, there were 5 KABCO type injuries and 72 property damage only (PDO) crashes. There were no fatal crashes reported at this site during this period. These are listed, with their associated U.S. DOT recommended values are listed in Table 6 below.

Because of the new intersection treatments, some of which eliminate chances for pedestrian crashes with buses and others the fundamentally alter the

Safety Savings

DOT Goal: Safety

Benefit Incidence: Public benefit; the public and individuals who are spared injury and property damage crashes.

20-year Benefit: Prevent 6 injuries prevented and 95 PDO crashes.

20-Year Value: \$307,066

Average per year: \$15,5353

safety conditions for buses, the improvements would completely eliminate these types of crashes at the Illinois Terminal site.

Over the 20-year analysis period, the safety improvements would prevent 6 injuries and 95 PDO crashes.

This is both a **private benefit and public benefit**. Private individuals benefit from avoiding risk of injury or death; and the public benefits in their reduced medical payments. This benefit advances the U.S. DOT goal of **Safety**.

⁶ MTD. Demonstration of Need: Safety Concerns and Congestion. 5339(b) Attachment 9.

This **benefit totals \$309,435** over the 20-year period (2018 \$ PV), or an average of \$15,472 per year.

Table 6

Safety Data Around Illinois Terminal Site

Category	Number of Crashes	Rate per Year	Value per Crash (2018 \$)
KABCO – O	3	0.20	\$3,330
KABCO – C	1	0.07	\$66,558
KABCO – U	1	0.07	\$181,237
PDO	71	4.73	\$4,396

Source: Smart Growth America, 2019; CUMTD, 2019

Real Estate Property Value Increase

The improved Illinois Terminal will create over 171,981 sq. ft. of new, leasable office and retail space. The value of this new real estate is a benefit since it creates a new real estate asset in the region with a defined market value. Furthermore, this is not a "double counted" benefit because the value is not created from capitalization of travel time savings. This is real estate being directly renovated or created by the project.

The U.S. DOT benefit-cost guidelines allow for a benefit of increases in property values. Pursuant to the guidance, the property value increase is claimed as a one-time "stock" benefit in the first year of operations, or 2023.⁷

To estimate the value of the land, a third-party real estate assessment was conducted to verify lease rates, vacancy rates, and capitalization rates for commercial real estate in the area, as well as the likely rates for the Illinois Terminal.⁸ We utilized these estimates of **\$25 per sq. ft.** for office and retail. Additionally, this is validated by comparable leases that range up to \$31 per sq. ft.⁹

The real estate report also indicates an assumption

Real Estate Property Value Increase

DOT Goal: Economic Competitiveness

Benefit Incidence: Private benefit; developer and MTD.

20-year Benefit: 171,981 sq. ft. of development valued at \$62.3 mil. in undiscounted 2018 \$.

20-Year Value: \$44.4 million in 2023.

Average per year: n.a. One-year stock value in 2023

of **13 percent vacancy**, as well as a **5.5 percent capitalization rate** appropriate for this facility. The capitalization rate ("cap rate") is an expression of the expected operating income and the anticipated asset value. It is the relationship between net

⁷ U.S. Department of Transportation (2018). Benefit-Cost Analysis Analyses Guidance for Discretionary Grant Programs. https://www.transportation.gov/sites/dot.gov/files/docs/mission/office-policy/transportation-policy/284031/benefit-cost-analysis-guidance-2018_0.pdf

⁸ Cotter Consulting letter, July 2019.

⁹ Core Consulting, letter and lease comparables, July 2019.

operating income (gross revenues, adjusted for vacancy, less expenses) and the asset value.

The following formulas outline how the asset value is estimated in this analysis.

 $Asset Value = \frac{Net Operating Income}{Cap Rate}$

Asset Value = $\frac{[(Square feet) * (Lease price $ per s. f) * (1 - Vacancy Rate)] - Expenses}{Cap Rate}$

An important point is that the expenses equal to net operations and maintenance (O&M) cost. MTD indicates that O&M costs in the No-Build scenario are \$260,000 per year, while the total O&M costs in the Build scenario are \$575,802 per year. This yields a **net O&M cost of \$315,802 per year**. These O&M costs are apportioned to the new leasable real estate as the expense in the calculation of net operating income and asset value.

Furthermore, because the O&M costs are deducted from the operating income in this benefit, *they are not included as costs* later in the analysis. This avoids double counting the costs. In other words, this analysis assumes that the O&M costs are capitalized out of the property value creation.

Table 7 below outlines the 171,981 sq. ft. of space in its four components and the real estate assumptions made for each part.

The resulting value of the new leasable space is \$62.3 million in real 2018 dollars. When discounted at 7 percent, the office value totals \$39.5 million and the retail space is valued at \$4.9 million, for a total real estate property value creation of \$44.4 million.

As a real-estate value increase, this is a **private benefit** experienced by the owners of the Illinois Terminal, in this case the MTD. It is possibly a public benefit if one considers the public nature of the agency. This advances the U.S. DOT strategic goal of **Economic Competitiveness.**

Thus, **this benefit totals \$44.4 million** over the 20-year period (2018 \$ PV), specifically applied as a one-time stock value in 2023.

Table 7Real Estate Assumptions and Value (Undiscounted 2018 \$)

	Office Space Part 1	Office Space Part 2	Retail Space Part 1	Retail Space Part 2	Total
Square Feet	13,681	139,300	1,800	17,200	171,981
Estimated Lease Price (annual \$ / sq. ft)	\$25.00	\$25.00	\$25.00	\$25.00	na
Vacancy Rate	13.0%	13.0%	13.0%	13.0%	na
Expense	\$25,122	\$255,791	\$3,305	\$31,584	\$315,802
Gross Income	\$342,025	\$3,482,500	\$45,000	\$430,000	\$4,299,525
Net Operating Income	\$272,400	\$2,773,984	\$35,845	\$342,516	\$3,424,785
Capitalization Rate	5.5%	5.5%	5.5%	5.5%	na
Estimated Value (2018 \$)	\$4,953,452	\$50,436,070	\$651,722	\$6,277,569	\$62,268,814

Source: Smart Growth America, 2019; Cotter Consulting, 2019

Residual Value

The residual value reflects the concept that an asset has remaining value at the end of an arbitrary analysis period, which is 2042 in this analysis.

We assume a useful life of 50 years for the Illinois Terminal facility. This life-cycle has been validated by the building architect, which indicates that "with continued ongoing maintenance, this facility should easily prove itself to have a fifty-year life span."¹⁰

Based on a linear depreciation rate this, the initial value in 2023 is \$70,750,000, equal to the capital costs in the first year of operations. At a linear depreciation rate for a 50-year life-cycle, the facility depreciates at \$215,573 million per year.

When discounted, **the residual value in 2042 is \$8.6 million in present value 2018 dollars**, and it is applied as a one-time benefit in the final year of the analysis period.

Residual Value

DOT Goal: Economic Competitiveness

Benefit Incidence: Private benefit; developer and MTD.

20-year Benefit:

Remaining facility value at the end of the analysis period.

20-Year Value: \$8.6 million in 2042.

Average per year: n.a. One-year stock value in 2042.

¹⁰ RATIO Architects, letter, July 2019.

Benefits Summary

Over a 20-year period from 2023 to 2042, the cumulative benefits total \$65.2 million (2018 \$ PV).

Table 8. Cumulative Benefits, 2023 to 2040, Present Value 2018 \$

Benefit Category	Value
Travel Time Savings - Existing Riders	\$11,738,873
Generalized Cost Savings - Induced Riders	\$160,479
Safety Benefits	\$309,435
Real Estate Property Value Creation - Office	\$34,491,964
Real Estate Property Value Creation - Retail	\$4,904,840
Residual Value	\$8,647,836
Total Benefits	\$65,251,059

Source: Smart Growth America, 2019

Figure 4 shows the benefits over time. Because the property value creation is a onetime stock benefit occurring in 2023, the first year of operations, this is where most of the benefits occur. Subsequent benefits occur as a stream over time, with a residual value bump in 2042.

Figure 3 outlines the distribution of benefits. The majority (68 percent) of these benefits are from the office and retail property value creation. The second largest benefit savings is travel time savings for existing riders (18 percent) followed by residual value (13 percent). Safety benefits and generalized cost benefits for induced riders amount to less than 1 percent of all benefits.

Figure 4 shows the benefits over time. Because the property value creation is a onetime stock benefit occurring in 2023, the first year of operations, this is where most of the benefits occur. Subsequent benefits occur as a stream over time, with a residual value bump in 2042.



Figure 3 Distribution of Benefits, Present Value 2018 \$

Source: Smart Growth America, 2019



Figure 4 Annual Benefits Over Time, Present Value 2018 \$

Costs

Capital Costs

MTD provided direct capital costs broken down for the different components of the project. In undiscounted 2018 dollars, these costs amount to \$70,750,000.

The capital construction period is a 26-month period from November 2020 through the end of 2022. This analysis with 2 of 26 months of costs in 2020; 12 of 26 months of costs in 2021; and 12 of 26 months of costs in 2022.

In present value 2018 dollars, capital costs total \$56.3 million.

Table 9 Capital Costs

Category	Cost (undiscounted 2018 \$)
Rural & Intercity Bus Platforms, front entrance improvements	\$1,700,000
Interior renovation of Illinois Terminal	\$2,000,000
Land acquisition	\$1,560,000
Mixed-use facility	\$65,490,000
Total Capital Costs	\$70,750,000

Source: MTD, 2019

O&M Costs

MTD reported that O&M costs for the existing facility are \$260,000 per year and would increase to \$575,802 per year in the Build scenario. Thus, the net O&M costs are \$315,802 per year in real 2018 dollars.

As previously discussed, **O&M costs are excluded as costs in this analysis because they are considered to be "capitalized" out of the property value creation** (see page 12). In other words, the property value creation benefit already incorporates the O&M costs in them (it is net of the capitalized O&M cots). Therefore, we do not include the O&M costs again in the denominator of this BCA.

Costs Summary

The **total costs are \$56.3 million** (2018 \$ PV) million from the beginning of construction in 2019 through the end of the analysis period in 2040. These costs include capital costs but, as discussed, we excluded O&M costs because they were capitalized into the real estate values.

Table 10

Cumulative Costs, 2020 to 2042, Present Value 2018 \$

Category	Value (2018 \$ PV)
Capital Costs	\$56,320,250
O&M Costs	-
Total Costs	\$56,320,250



Table 11 Project Costs Over Time, Present Value 2018 \$

Source: Smart Growth America, 2018

Results

This BCA reports the results of the Illinois Terminal project at a 7 percent discount rate.

The metrics reported in this analysis include:

- Benefit-cost ratio (BCR): the ratio of present value benefits to present value costs
- Economic rate of return (ERR): the rate of return of the economic benefits, or alternatively, the discount rate at which the benefit-cost ratio would be exactly 1.0. It is calculated off of the undiscounted benefit and cost streams.
- Net present value (NPV): the difference of present value benefits and present value costs.
- Break-even year: the year in which cumulative present value benefits exceed present value costs.

Benefit-Cost Results Summary

The BCR of the Illinois Terminal project, using the methodology described in this report, **1.16 at a 7 percent discount rate**. **This suggests that the project present value benefits are greater than the present value costs**. The net present value is \$8.9 million. The present value cumulative benefits would exceed cumulative costs in 2042, taking the full 20 years to "break even."

Table 12

Summary of Benefit Cost Analysis Metrics

Category	Value
Discount Rate	7%
Benefit-Cost Ratio	1.16
Net Present Value	\$8,930,808
Economic Rate of Return	10.3%
Break-Even Year	2042

Results Over Time

Figure 5 below shows the benefits and costs of the Illinois Terminal project over time. At a 7 percent discount rate, **present value benefits exceed present value costs in 2042.** Thus, after 2042 we would expect the project to "break even" in both cumulative and marginal terms.

Figure 5 Cumulative Benefits and Costs, Present Value 2018 \$, 7% Discount Rate



Source: Smart Growth America, 2019

Summary

This report is a benefit-cost analysis of the proposed Illinois Terminal in Champaign, Illinois. Based on the methodologies outlined in the report, the benefit-cost ratio of the project is 1.16 with a 7 percent real discount rate. This means that the project is beneficial to society in present value 2018 dollars at a 7 percent discount rate.

Finally, this BCA is only capable of measuring certain benefits that can be monetized. An improved Illinois Terminal may have benefits beyond those which were monetized in this analysis. This includes improved real estate values in the surrounding area that are above and beyond the capitalized travel time savings. Also, the improved comfort and convenience of the facility may have an impact on lowering the generalized costs of Amtrak riders. Finally, improved bus operations would have positive impacts on the congestion conditions in the surrounding area.

This BCA finds that the benefits of the MTD's Illinois Terminal project exceed the project costs through 2042. The project stands to improve travel times for existing bus passengers, increase bus ridership and provide benefits to new bus passengers, and create significant real estate value to improve the economy of the Champaign-Urbana region.

Illinois Terminal: Benefit-Cost Analysis 2019

Appendix A Detailed Summary of Results

Table 13 Detail of Benefits Results

	Travel Time Savings -	Generized Cost Savings		Real Estate Property			Total Benefits 2018 \$
Year	Existing Riders	Induced Bus Riders	Safety Savings	Value Creation	Residual Value	Total Benefits 2018 \$	P.V.
2020	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-
2022	-	-	-	-	-	-	-
2023	1,432,420	7,924	37,993	62,268,814	-	63,747,150	45,450,837
2024	1,430,778	8,743	37,993	-	-	1,477,514	984,530
2025	1,429,138	9,560	37,993	-	-	1,476,691	919,609
2026	1,427,499	10,377	37,993	-	-	1,475,870	858,970
2027	1,432,424	12,344	37,993	-	-	1,482,761	806,524
2028	1,437,365	14,329	37,993	-	-	1,489,687	757,281
2029	1,442,323	16,332	37,993	-	-	1,496,649	711,047
2030	1,447,299	18,355	37,993	-	-	1,503,647	667,637
2031	1,452,292	20,396	37,993	-	-	1,510,681	626,879
2032	1,457,302	22,457	37,993	-	-	1,517,752	588,610
2033	1,462,329	24,537	37,993	-	-	1,524,859	552,679
2034	1,467,373	26,636	37,993	-	-	1,532,003	518,942
2035	1,472,435	28,755	37,993	-	-	1,539,183	487,266
2036	1,477,514	30,894	37,993	-	-	1,546,401	457,524
2037	1,482,611	33,052	37,993	-	-	1,553,657	429,599
2038	1,487,726	35,231	37,993	-	-	1,560,950	403,379
2039	1,492,858	37,429	37,993	-	-	1,568,280	378,760
2040	1,498,008	39,648	37,993	-	-	1,575,649	355,645
2041	1,503,175	41,887	37,993	-	-	1,583,056	333,941
2042	1,508,361	44,147	37,993	-	43,865,000	45,455,501	8,961,398
Total	29,241,230	483,033	759,866	62,268,814		136,617,942	65,251,059

Table 14 Detail of Cost Results

Year	Capital Costs	O&M Costs*	Total Costs 2018 \$*	Total Costs 2018 \$ P.V.*
2020	5,442,308	-	5,442,308	4,753,522
2021	32,653,846	-	32,653,846	26,655,265
2022	32,653,846	-	32,653,846	24,911,463
2023	-	315,802	-	-
2024	-	315,802	-	-
2025	-	315,802	-	-
2026	-	315,802	-	-
2027	-	315,802	-	-
2028	-	315,802	-	-
2029	-	315,802	-	-
2030	-	315,802	-	-
2031	-	315,802	-	-
2032	-	315,802	-	-
2033	-	315,802	-	-
2034	-	315,802	-	-
2035	-	315,802	-	-
2036	-	315,802	-	-
2037	-	315,802	-	-
2038	-	315,802	-	-
2039	-	315,802	-	
2040	-	315,802	-	-
2041	-	315,802	-	-
2042	-	315,802	-	-
Total	70,750,000	6,316,040	70,750,000	56,320,250

* Note: O&M costs reported but excluded in the total. O&M costs considered capitalized out of property value benefits

Table 15Detail of Benefit, Cost, and Net Present Value Results

			Net Present Value			
Year	Prsent Value Benefits	Present Vlaue Costs	(Benefits - Costs)	Cumulative Benefits	Cumulative Costs	Cumulative NPV
2020	-	4,753,522	(4,753,522)	-	4,753,522	(4,753,522)
2021	-	26,655,265	(26,655,265)	-	31,408,788	(31,408,788)
2022	-	24,911,463	(24,911,463)	-	56,320,250	(56,320,250)
2023	45,450,837	-	45,450,837	45,450,837	56,320,250	(10,869,413)
2024	984,530	-	984,530	46,435,367	56,320,250	(9,884,883)
2025	919,609	-	919,609	47,354,976	56,320,250	(8,965,274)
2026	858,970	-	858,970	48,213,946	56,320,250	(8,106,304)
2027	806,524	-	806,524	49,020,470	56,320,250	(7,299,781)
2028	757,281	-	757,281	49,777,751	56,320,250	(6,542,500)
2029	711,047	-	711,047	50,488,798	56,320,250	(5,831,452)
2030	667,637	-	667,637	51,156,435	56,320,250	(5,163,815)
2031	626,879	-	626,879	51,783,314	56,320,250	(4,536,936)
2032	588,610	-	588,610	52,371,925	56,320,250	(3,948,326)
2033	552,679	-	552,679	52,924,604	56,320,250	(3,395,647)
2034	518,942	-	518,942	53,443,546	56,320,250	(2,876,705)
2035	487,266	-	487,266	53,930,812	56,320,250	(2,389,439)
2036	457,524	-	457,524	54,388,336	56,320,250	(1,931,914)
2037	429,599	-	429,599	54,817,935	56,320,250	(1,502,315)
2038	403,379	-	403,379	55,221,314	56,320,250	(1,098,936)
2039	378,760	-	378,760	55,600,075	56,320,250	(720,176)
2040	355,645	-	355,645	55,955,719	56,320,250	(364,531)
2041	333,941	-	333,941	56,289,660	56,320,250	(30,590)
2042	8,961,398	-	8,961,398	65,251,059	56,320,250	8,930,808
Total	65,251,059	56,320,250	8,930,808	n.a	n.a	n.a

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VIA ELECTRONIC MAIL



July 12, 2019

Mr. Karl Gnadt Managing Director Champaign-Urbana Mass Transit District

RE: Evaluation of Real Estate assumptions

Dear Mr. Gnadt:

The following summarizes our analysis of the value assumptions included in the Benefit Cost Analysis prepared by Smart Growth America on behalf of the Champaign-Urbana Mass Transit District, particularly for rental rates, capitalization and vacancy rates.

The Yards project will bring forth opportunities for both new businesses, or those looking to grow and move into a new space in Downtown Champaign, IL, by providing renovations within the existing Illinois Terminal rental space and additional office space and retail space.

As of June 2019, there are office spaces listed for lease within a one-mile radius of the Illinois Terminal for an average of \$15 sqft/year¹. In the same radius, retail spaces are currently listed for an average of \$17 sqft/year¹. Two of the listings were buildings built in 2018, with higher retail lease rates closer to \$20 sqft/year(1). The Yards property will be classified as a "Class A" property, because the space: will have great access to transportation; will be professionally managed; and will be one of the highest quality buildings in the Downtown area once complete. As a result, this multi-use property will attract the highest quality tenants and command the higher rents in comparison to the metro area surroundings. Therefore, an average lease rate of \$22 sqft/year would be appropriate for retail and office spaces created by The Yards project based on 2019 numbers.

Considering the fact that the project will not be ready for occupancy until 2023, those rates should be escalated. The May 2018- May 2019 increase in the Consumer Price Index (CPI) of all items less food and energy ranged from 1.6 percent to 2.42 percent, so the average lease rate of \$22 sqft/year in 2019 terms, will increase to approximately \$24 sqft/year come 2023. For Asset Value calculation purposes, a lease rate of \$24 sqft/year would be appropriate.

The capitalization rates currently for Champaign-Urbana, IL are 5.64 percent and 5.36 percent respectively, for Class A metro office and retail spaces (3). For Asset Value calculation purposes, a capitalization rate (referred to as "cap rate") of 5.5 percent would be appropriate.

The national average for office vacancy spaces in the United States has decreased down to 14.7% in the first quarter of 2019, according to Office Outlook in Q1 of 2019, research done by JLL(4). Statista provides office and retail vacancy rate forecasts, showing the predicted vacancy rates for the United States to be 12.5% and 13.9% respectively by Q3 of 2020 (5). For calculation purposes, a vacancy rate of 13% would be used to when determining the Net Operating Income for the new property.

If you require additional information, please contact me.

Sincerely,

Noroting Wedorty

Dorothy McCarty, AIA, LEED AP Cotter Consulting, Group Manager



Sources

- ¹ <u>https://www.loopnet.com/for-lease/?sk=f4546322a69c72070cf4e4b378e9e768&bb=s2qj_ku9rJ35l6_D</u>
- ² <u>https://www.bls.gov/opub/ted/2019/consumer-prices-up-1-point-8-percent-over-year-ended-may-2019.htm</u>
- ³ <u>https://apartmentloanstore.com/champaign-urbana/illinois/cap-rate</u>
- ⁴ <u>https://www.us.jll.com/en/trends-and-insights/research/office-market-statistics-trends</u>
- ⁵ <u>https://www.statista.com/statistics/194102/us-retail-vacancy-rate-forecasts-from-2010/</u>



			Leased	Leased Le			Annual	
			Square	Lease	Term	Space	Base	
Property	Location	Tenant	Footage	Start Date	(years)	Туре	Rent/SF	
OFFICE RENTAL COM	IPARABLES							
One Main Street	1 East Main Street,	Snow Bling Shavery	1,218	Dec-14	4	Office	\$ 18.00	
M2 on Neil	301-321 North Neil Street	Volition	47,080	Jun-14	10	Office	\$ 17.00	
	301-321 North Neil Street	Clifton Larson Allen	5,571	Aug-16	10.3	Office	\$ 18.50	
	301-321 North Neil Street	Inman & Fitzgibbons	1,782	Aug-16	5	Office	\$ 16.00	
	301-321 North Neil Street	CU Aerospace	1,014	Dec-15	3	Office	\$ 16.00	
	301-321 North Neil Street	The McDonald Group	1,535	Dec-15	3	Office	\$ 15.00	
The Atkins Building	1800 South Oak Street	Futurewei Technologies	6,690	Oct-17	5	Office	\$ 17.00	
	1800 South Oak Street	Indigo AG	867	Sep-17	2	Office	\$ 18.01	
	1800 South Oak Street	Syngenta Crop	1,951	Feb-17	3	Office	\$ 19.00	
	1800 South Oak Street	WeSpline	797	Jan-17	4	Office	\$ 17.50	
616 E Green Street	616 E Green Street	UofI at Chicago	1,259	Oct-16	1	Office	\$ 18.00	
Ameren Building	2100 South Oak Street	AARP	3,371	Jul-16	3	Office	\$ 18.50	
Mixed	1904 South First Street	Caterpillar	22,100	Jul-18	5.4	Office	\$ 16.00	
	1904 South First Street	Granular	10,445	Mar-18	5	Office	\$ 19.50	
	1904 South First Street	Synchrony	3,457	Jan-18	5	Office	\$ 19.50	
	1904 South First Street	Brunswick	4,339	Dec-17	5	Office	\$ 20.00	

DISCUSSION OF OFFICE RENT COMPARABLES

As indicated, office rental rates generally range from \$15.00 to \$20.00 per square foot, with most leases structured on a net basis. It is interesting to note that most of the comparables were constructed between 2000 and 2008, with only one (Comparable 6) constructed in 2017. Despite the construction dates, these properties represent what is considered to the primary alternative office product currently present/available in the market. As expected, the higher end of the range is represented by the newest building presented which is the most recent construction to have occurred in the UI Research Park.

When analyzing the subject, consideration is given to the proposed nature of the development and the fact that the space will not be delivered for approximately 36 months. More importantly, the subject will represent the newest product in the market, located in what is arguably the most compelling new development in Downstate Illinois location. The proposed rental rate upon delivery of the subject's office is reasonable as the NNN expense for office in the market ranges from \$5.00-\$8.00 per square foot. Therefore, the proposed rate of \$25 per square foot on a gross lease is readily supported and could be on the low end of the range.

RETAIL RENTAL CO	MPARABLES							
One Main Street	1 East Main Street,	Big Grove Tavern	9,049	May-15	5	Office	\$	19.00
	217 S. Neil St.	Tri-County Welding	1,100	Apr-18	5	Retail	\$	17.50
	415 N. Neil St.	Sticky Rice	1,500	Apr-18	5	Retail	\$	26.00
	202 E Green St.	Shiquan Wonton	2,208	Nov-17	10	Retail	\$	18.00
	907 W Marketview Dr	Jenny Craig Weight Loss Center	1,500	Jan-18	5	Retail	\$	18.00
	901 S Fourth St.	Illini Inn	2,500	Oct-18	10	Retail	\$	25.00
	601 S 6th St.	Jip Bap	1,226	Nov-18	5	Retail	\$	27.50
	601 S 6th St.	Paris Super Crepes	1,242	Jul-16	5	Retail	\$	26.00
	601 S 6th St.	Ozu Restaurant	1,906	Jul-16	5	Retail	\$	26.00
	616 E Green St.	Subway	1,600	May-01	20	Retail	\$	30.68
	616 E Green St.	Spoonhouse	2,297	Jun-10	10	Retail	\$	28.83
	616 E Green St.	Panera	4,022	Dec-08	10	Retail	\$	29.82
	616 E Green St.	Campus Mobile Solutions	1,000	Nov-18	5	Retail	\$	32.40
	616 E Green St.	McDonald's	4,022	Jun-14	10	Retail	\$	26.26
	501 E Green St.	Starbucks	2,151	Jun-05	15	Retail	\$	50.56
	803 W Anthony Dr.	Einstein Brothers Bagels	2,385	Nov-13	10	Retail	\$	33.00
	803 W Anthony Dr.	Firehouse Subs	2,300	Apr-14	10	Retail	\$	33.50
	901-903 W Anthony Dr.	Chipotle	1,500	2012	10	Retail	\$	32.00
	901-903 W Anthony Dr.	Vitamin World	1,500	2012	10	Retail	\$	36.00
	901-903 W Anthony Dr.	Five Guys	1,500	2012	10	Retail	\$	28.00
	901-903 W Anthony Dr.	The Mattress Firm	unknown	2012	10	Retail	\$	28.00
	2508-2610 N Prospect Ave.	Blaze Pizza	2,500	Feb-17	5	Retail	\$	36.00
							E v	~ C 1 1 10

2508-2610 N Prospect Ave.	T Mobile	1,620	Dec-17	5	Retail	\$ 38.00
						5 yr \$41.80
2508-2610 N Prospect Ave.	Corelife Eatery	3,628	Mar-18	5	Retail	\$ 36.00
						5 yr \$39.6(
1808 Round Barn Rd./501 S N	Dotty's	1,600	May-16	5	Retail	32.50 gros

DISCUSSION/OF RETAIL RENT COMPARABLES

As indicated, the retail rental rates for high value locations in the market range from \$18.00 to \$36.00 per square foot, with most leases structures on a net basis. The most comparable are higher visibility and traffic locations in the higher end of the range.

When analyzing the subject, consideration is given to the proposed nature of the development and the fact that the space will not be delivered for approximately 36 months. More importantly, the subject will represent the newest product in the market, located in what is arguably the mostcompelling new development in Downstate Illinois location. The proposed rental rate upon delivery of the subject's retail space is reasonable as the NNN expense for retail space in the market ranges from \$4.00-\$6.00 per square foot. Therefore, the proposed rate of \$30 per square foot on a gross lease is readily supported and could be on the low end of the range.



RATIO

Preservation Interior Design Landscape Architecture Urban Design + Planning Graphic Design

July 9, 2019

Mr. Karl Gnadt Managing Director Champaign-Urbana Mass Transit District 1101 East University Avenue Urbana, Illinois 61801

Re: Illinois Terminal Expansion

Dear Karl.

Subsequent to our recent discussion relative to the expected life span of Illinois Terminal and subsequent, expansions to Illinois Terminal, I offer herewith our opinion of both current and likely future construction.

RATIO Architects was engaged by the Champaign-Urbana Mass Transit District to oversee the 2014 study, Champaign-Urbana Mass Transit District Illinois Terminal Expansion Study. Among the many facets of this study, the design team had the opportunity to observe Illinois Terminal and generally review the condition of the facility and its systems. It was clear in 2014, as it continues to be apparent in 2019, that the facility is extremely well maintained. The facility opened in 1999. With continued, ongoing maintenance, this facility should easily prove itself to have a fifty-year life span.

Recently, RATIO Architects has been involved in conceptual design work associated with what is now known as The Yards, a large, mixed use development that is planned to include expansion to Illinois Terminal. We would anticipate the durability of any expansion or addition to Illinois Terminal to be equal to, or greater than, the existing facility inasmuch as design professionals in the State of Illinois are bound to compliance with not only the International Building Code, but we are also bound to the requirements of the Illinois Energy Code which, in practical terms, mandates durable, energy efficient building systems and, importantly, specific and stringent building envelope requirements. Assuming the District continues its current, diligent facilities maintenance regimen, there is no reason to assume that new expanded facilities would not be viable and useful fifty years after construction.

If RATIO may be of further assistance, please don't hesitate to contact me.

incerely Edward J. Scopel, AIA Principal

Cc: file

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