



APPENDIX A

Southern Illinois Multi-Modal Station: Benefit-Cost Analysis

October 2017

Location: [Carbondale, Illinois](#)

Project Type: [Urban – Transit – Multi-Modal Center](#)

Applicant: [City of Carbondale](#)

Type of Applicant: [City Government TIGER Funding](#)

Requested: [\\$14.64 Million DUNS Number: 096712948](#)

Website: Multi-Modal.explorecarbondale.com



Summary

Table 1: Summary of Benefit-Cost Analysis – Southern Illinois Multi-Modal Station

Analysis Item	Outcome
Current Status/Baseline & Problem to be addressed	<ul style="list-style-type: none"> • Existing, aging Amtrak Station • Station and facilities need ADA upgrades • Current ridership exceeds capacity of station • Does not provide central location for multiple modes of transportation • No connectivity between transportation modes • Inefficient and unsafe transfers between transportation modes • Does not include office space for other transportation services or organizations • Does not enhance and encourage revitalization and economic growth of Downtown
Change to Baseline/Alternatives	<ul style="list-style-type: none"> • Construction of a new Southern Illinois Multi-Modal Station (SIMMS) to provide access for modes of transportation including: Amtrak, Greyhound, Commuter Busses, Transit Buses, Pedestrians, and Bicyclists • No-Build
Type of Impacts	<ul style="list-style-type: none"> • Revitalize Downtown Carbondale • Meet future Amtrak ridership demands • Create a true Multi-Modal facility • Create new jobs • Improve transportation connectivity • Expand transportation alternatives in Downtown Carbondale • Meet ADA design standards to provide transportation access to all users
Population Affected by Impacts	<ul style="list-style-type: none"> • Amtrak passengers (local, regional & national) • SIUC students, faculty, and staff • Tourists to Carbondale & Southern Illinois region • Business travelers • Disabled and economically disadvantaged populations • Residents of Carbondale, Jackson County, and Southern Illinois • Downtown businesses
Economic Benefit	Monetized value of: <ul style="list-style-type: none"> • Vehicle operations & maintenance • Reduced fuel consumption • Reduced emissions • Reduced travel time (due to congestion) • Reduced accident costs • Increases tourism
Summary of Results	Estimated dollar value of: <ul style="list-style-type: none"> • Time savings • Reduced pollution • Reduced fuel consumption • Reduced vehicle operations & maintenance • Reduced accident costs
B/C Ratio	The results of the BCA are: <ul style="list-style-type: none"> • No Discount: 3.56:1 • 3% Discount: 2.19:1 • 7% Discount: 1.25:1

Introduction

This document provides a description of the input data and the methodological standards utilized for the benefit-cost analysis (BCA) of the SIMMS project as submitted by the City of Carbondale, Illinois for the TIGER IX Discretionary Grant funding.

BCA is a conceptual framework that quantifies, in monetary terms, as many of the costs and benefits of a project as possible. Benefits are broadly defined. They represent the extent to which people impacted by the project are made better-off, as measured by their own willingness-to-pay. In other words, central to a BCA is the idea that people are best able to judge what is “good” for them, what improves their well-being or welfare.

BCA also adopts the view that a net increase in welfare (as measured by the summation of individual welfare changes) is a good thing, even if some groups within society are made worse-off. A project or proposal would be rated positively if the benefits to some are large enough to compensate the losses of others.

Finally, BCA is typically a forward-looking exercise, seeking to anticipate the welfare impacts of a project or proposal over its entire life-cycle. Future welfare changes are weighted against today’s changes through discounting, which is meant to reflect society’s general preference for the present, as well as broader inter-generational concerns.

Analysis Framework

The TIGER IX project is expected to produce both quantifiable and less tangible qualitative benefits. The benefit-cost analysis conducted for the SIMMS project includes the quantifiable benefits and considers impacts and externalities of sufficient quality.

The specific methodology developed for this application was developed using the above BCA principles and the American Association of State Highway and Transportation Officials (AASHTO) guide *User Benefit Analysis for Highways* (August 2003) and with the ARRA guidance in the Federal Register. In particular, the methodology involves:

- Establishing existing and future conditions under the “build” and “no-build” scenarios.
- Assessing benefits with respect to each of the long-term outcomes identified in the Notice of Funding Opportunity (NOFO).
- Measuring benefits in dollar terms, whenever possible, and expressing benefits and costs in a common unit of measurement.
- Using DOT guidance for the valuation of travel time savings, benefits, and reductions in air emissions, while relying on industry best practice for the valuation of other effects.
- Discounting future benefits and costs with the real discount rates recommended by the DOT (7% and 3% for sensitivity analysis).
- Conducting a sensitivity analysis to assess the impacts of changes in key estimating assumptions.

A typical benefit-cost analysis uses a standard 20-year lifecycle to facilitate comparisons across projects. Per the guidelines, coupled with the expected life span of the SIMMS building and appurtenances, a 40-year lifecycle was used for this analysis. A typical benefit-cost analysis measures four primary categories of user benefits:

- Travel time savings
- Vehicle operating cost reductions
- Safety improvements
- Emission reductions, including greenhouse gases

For the TIGER IX Discretionary Grant application, the benefit-cost analysis has been expanded to include vehicle crash reductions.

Project capital costs are estimated annually from the start of construction to 4 years after the project construction is completed and the facility opened to users. Project capital costs include:

- Property acquisition
- Engineering and design
- Construction

In addition to project capital costs, the project will have annual costs after construction is completed and the station is opened to users. These annual costs include operation and maintenance (O&M) costs. The O&M costs include items such as:

- Station cleaning and maintenance
- Utilities (electricity, telephone, gas, water, internet, etc.)
- Landscaping maintenance
- Parking lot, sidewalk, and outside maintenance (such as landscaping, snow removal, etc.)

The future O&M costs (per square foot of station area) for the new station and parking garage were developed based upon similar O&M costs provided by the City of Carbondale for maintenance of the historic passenger railroad depot.

The O&M costs for the new station shown in the BCA also account for the net difference between the O&M costs for the existing station and the O&M costs for the new station. Since the existing station is already incurring O&M costs, the BCA only uses the additional O&M costs for the new station based on the planned size and its energy-efficient and environmentally friendly design.

The definition of project cost is more inclusive than construction costs or the funding requested from the TIGER IX Discretionary Grants. This methodology is conservative, but it reflects the true agency costs over the lifecycle of the proposed project.

Several sources of input data were consulted. Examples include:

- *Downtown Revitalization Background Review*, City of Carbondale, August 2012
- *Downtown Master Plan*, City of Carbondale, 2014
- *Carbondale's Railroad History* (<http://explorecarbondale.com/carbondales-railroad-history>)
- *City of Carbondale Comprehensive Plan*, City of Carbondale, June 2010
- *Downtown Development Plan 1990-200*, City of Carbondale, May 1990
- *Amtrak Station Program and Planning Guidelines*, Amtrak, May 2013
- U.S. Energy Information Administration
- *2006-2014 Illinois Crash Facts and Statistics*, Illinois Department of Transportation
- *An Urban Beginning: Moving Forward Together; SIMPO 2040 Long Range Transportation Plan*, Southern Illinois Metropolitan Planning Organization, September 2015
- *Multi-Modal Transportation System Assessment*, Southern Illinois Metropolitan Planning Organization, June 2014
- *Midwest Regional Rail Initiative Benefit Cost & Economic Analysis*, Transportation Economics & Management Systems, Inc. in association with HNTB, November 2006
- *TIGER and FASTLANCE BCA Resource Guide*
- *Benefit-Cost Analysis Guidance for TIGER Applicants*

Economic Assumptions

This section summarizes the economic assumptions utilized for the BCA for the SIMMS project to comply with the guidelines of the TIGER Discretionary Grant. In the cases where the TIGER Discretionary Grant guidelines did not specify value, documented standard values were utilized.

Discount Rate

The guidance in the Federal Register for the discount is 7%. For the sensitivity analysis, the discount rate is 3%.

Study Period

The City of Carbondale has completed the preliminary environmental site assessment for the project site, as well as the preliminary engineering layout and supporting schematic architectural design for the station. Preparation of the final engineering plans, specifications, and construction documents will begin in early 2018. Final construction plans and documents will be completed within 6 months. The project will be advertised for bid for contractors during the third quarter of 2018 and the contract for the construction of the station should be awarded shortly thereafter. The construction of SIMMS is expected to be completed and the station opened during the second quarter of 2020.

The BCA study period is 40 years, beginning at the end of the second quarter of 2020 and ends in 2060.

Project Overview

The project under analysis consists of the design and construction of a new Multi-Modal transportation center, SIMMS, in Downtown Carbondale. SIMMS will include a new two-story station and parking garage. The project also includes the demolition of the existing station.

The purposes of the proposed project are to:

- Provide a new Multi-Modal station to connect multiple modes of transportation in one, single location for convenient access (**State of Good Repair**)
- Design and construction of a modern station, per the Amtrak Station Programming Guidelines, to meet future transportation needs and ridership (**State of Good Repair**)
- Provide safe accommodations for motorized and non-motorized transportation users to connect to other modes to transportation, including ADA accessible facilities (**Safety**)
- Design and construction of a station that meets the safety and security needs of patrons (**Safety**)
- Create jobs in an economically disadvantaged region; connect people with employment, education, healthcare, and other essential services via safe, reliable and affordable transportation; and revitalize Downtown Carbondale (**Ladders of Opportunity**)
- Spur and enhance the revitalization of Downtown Carbondale (**Economic Competitiveness**)
- Connect people with employment (**Economic Competitiveness**)
- Create a Multi-Modal station to connect Amtrak, Greyhound, Jackson County Mass Transit, South Central Illinois Transit, Shawnee Mass Transit, RIDES Mass Transit, Saluki Express, taxis, passenger vehicles, bicycles, and pedestrians in one, central location in Downtown Carbondale to encourage Multi-Modal trips (**Quality of Life**)
- Reduce fuel consumption and emissions (**Environmental Sustainability**)

Base Scenario and Alternatives

The base or, “no build”, scenario includes utilizing the existing Amtrak station throughout the 40-year design year (See USDOT Benefit-Cost Analysis Guidance for TIGER and INFRA Applications). The alternative or “build” scenario includes the construction of the Multi-Modal transportation center, SIMMS.

Amtrak Passenger Ridership

The existing Amtrak ridership volume at the Carbondale Amtrak station was obtained from the National Association of Railroad Passengers. Ridership data between 2009 and 2016 was collected to determine the annual average growth rate of riders at the station. It was determined that the “background” Amtrak ridership at Carbondale will increase at 0.80% per year. The background Amtrak riders will use the station whether or not the new Multi-Modal center is constructed.

The future, 20-year design Amtrak ridership projection at the Multi-Modal transportation center, SIMMS, was provided by Amtrak (Chicago) to the City of Carbondale. The 20-year

ridership at Southern Illinois Multi-Modal Station is expected to be 211,879 riders per year. Ridership analysis capped at 20-years to maintain the data’s reliability. The BCA analysis calculated the “new Amtrak riders” at SIMMS due to the new Multi-Modal center. The BCA calculations utilize the “new Amtrak riders” to calculate the benefits because they are a direct result of the project.

Local Mass Transit Ridership

According to local transit officials, average rider mileage is 5.8 miles per trip. Rides mass Transit District projects a combined system wide increase (Saluki Express, JCMTD, and Rides) in ridership of 2% due to the SIMMS project. This would result in 15,118 additional riders annually using local mass transit.

Costs

The costs for SIMMS include engineering design, property acquisition, and construction. Per the TIGER BCA guidelines, previous engineering design costs already expended by the City for the project should not be included as a “cost” for the BCA. Table 2 includes a summary of the project costs.

Table 2: Project Costs

Project Task	Cost
Land Acquisition	569,719
Design & Engineering	1,023,808
Construction	16,681,500
Construction Testing & Inspection	24,973
Total Future Project Costs	\$18,300,000

Benefits

Travel Time/Travel Delay Savings

The BCA includes two “travel time savings” calculations for benefits due to the construction of the new Multi-Modal transportation center. By diverting passenger vehicle trips to passenger train trips, the project will create a benefit of travel time savings due to reduced congestion. The Midwest Regional Rail Initiative developed a cost per trip for travel time savings due to a reduction in traffic congestion. SIMMS will also result in a travel time savings due to a reduction in traffic congestion.

The project also results in a travel time savings due to the ability of Amtrak passengers to be productive while traveling by train as compared to driving in a single-occupant passenger vehicle. The travel time savings was calculated for business trips from Carbondale to other metropolitan stations – Chicago, Champaign, Memphis, and New Orleans. The BCA utilized a percentage of new Amtrak trips to each of the stations for business trips for the benefit calculations.

Reduced Crashes

The new Multi-Modal transportation center will reduce the number of passenger vehicles along the roadways. The reduction of vehicle trips is due to trips previously taken by passenger vehicles being taken by Amtrak passenger train. The number of reduced passenger vehicle trips was calculated for each year of the BCA study period. The origin and destination pairs (i.e. Carbondale-Chicago, Carbondale-Champaign, Carbondale- Memphis, etc.) were established in order to calculate the total vehicle miles that automobile travel was reduced by.

Annual crash data, from the Illinois Department of Transportation (IDOT), was obtained in order to determine the average annual vehicular crash rate per 1,000,000 vehicle miles traveled. The crash data includes all crashes on Illinois interstates, highways, county roadways, and local municipal streets that occurred during a calendar year. The IDOT annual crash data reports also include a total cost for the accidents that occurred during the year. The BCA utilized nine (9) years of IDOT crash data to determine the average annual crash rate per 1,000,000 vehicle miles traveled and the average annual cost of the accidents. This information was utilized to calculate the reduction of crashes and their associated costs for each year of the BCA study period for the reduction of passenger vehicle miles replaced by trips via Amtrak.

Fuel Saved

In order to calculate the fuel savings from the construction of SIMMS, the annual passenger vehicle miles saved, due to these trips being taken on Amtrak, were utilized. Using information from the U.S. Environmental Protection Agency (USEPA), the average passenger car fuel economy rate was obtained and utilized to determine the amount of fuel saved by the project. The average fuel cost (per gallon) as determined from the annual average Midwest fuel costs for all grades of gasoline for a 6-year period. The BCA utilized this information to calculate the cost of the fuel saved each year due to the replacement of passenger vehicle trips with passenger train trips.

Reduced Emissions

Information from the Midwest Regional Rail Initiative Benefit Cost & Economic Analysis and the US EPA was utilized to obtain the amount of emissions generated by passenger vehicles per miles traveled and the cost associated (See tab #2 of the BOC spreadsheet). The average annual passenger vehicle miles traveled that were replaced with Amtrak trips was utilized to determine the amount of emissions saved by the project as well as the monetary value of the savings.

Additional Project Benefits

SIMMS will generate numerous benefits that are not quantifiable or unable to have a monetary value associated with them. These benefits are important benefits that are due to the implementation of the project but are not able to be included in the BCA. Table 3 includes a summary of those benefits due to the construction of SIMMS.

Table 3: Additional Project Benefits Generated by Southern Illinois Multi-Modal Station

Reduction of Vehicle Emissions and Fuel Consumption

- Due to reduction of automobile trips between Southern Illinois Multi-Modal Station and SIUC campus
- Due to increased non-motorized trips in Downtown Carbondale and surrounding areas
- Due to reduction of passenger vehicles trips in Carbondale, Jackson County, and Southern Illinois due to the addition of mass transit services at Southern Illinois Multi-Modal Station
- Due to creation of a hub for Multi-Modal connectivity at Southern Illinois Multi-Modal Station

Continuous Amtrak Service

- Design plans and construction sequencing will be done so that the existing Amtrak station remains open during construction of Southern Illinois Multi-Modal Station and the parking garage.
- During construction, no additional costs for construction of a temporary station or busing riders to another station.

Travel Fee Savings

- Due to reduction of parking fees in metropolitan areas (i.e. Chicago)
- Due to reduction of tollway fees in Chicago or other metropolitan areas

Alternative Travel Options

- Introduce new riders to Amtrak
- Introduce new riders to mass transit services
- Provide travel options for those that do not want to drive long distances or in congested areas
- Provide the opportunity for a Multi-Modal trip
- Economic travel options for students, the elderly, and economically disadvantaged populations
- Provide bike sharing and bike storage facilities at Southern Illinois Multi-Modal Station

Community Development & Enhancement

- Catalyst to promote and enhance revitalization of downtown Carbondale
- Create a modern, environmentally sustainable facility in Southern Illinois
- Enhance the landscape of Downtown for all visitors (pedestrians, bicyclists, transit riders, motorists, etc.)
- Create a Multi-Modal station that will be flexible to accommodate future travel demands
- Greet visitors and tourists arriving by train and bus to Southern Illinois

SIMMS Benefit Cost Analysis Exhibits

Exhibit 1 – Benefit-Cost Analysis Spreadsheet

Exhibit 2 – Illinois Crash Data

Exhibit 3 – Supporting Information for Benefit Cost Analysis

Southern Illinois Multi-Modal Station (SIMMS) Benefit Cost Analysis

Increased Transit and Amtrak Ridership										Benefits										Costs				
Year	Total Amtrak Riders	Backgrnd Amtrak Riders 0.80% per year	Total New Amtrak Riders (Due to Project)	New Amtrak Riders to/From Chicago 40% (620 miles)	New Amtrak Riders to/From Champaign 45% (362 miles)	New Amtrak Riders to/From Memphis 10% (420 miles)	New Amtrak Riders to/From New Orleans 5% (1232 mi.)	Increased riders using RIDES Mass Transit, JCMTD, and Saluki Express due to project (avg mi. per trip = 5.8)	Total Passenger Vehicles Miles saved	Fuel & Vehicle Operation & Maint. Savings @ \$0.54 per mile	Emissions Savings (see tab #2)	Travel Time Savings Congestion @ \$28.56 per trip	Travel Time Savings Varies based on destination	Crash Reduction \$20,759 per crash	Increased Tourism due to Project \$151 per day/person	Increased Business Travel To New Downtown Hotel due to Project	Total Benefits (2016 Dollars)	Discounted Values		Design and Construction	Station Maint. and operation \$7.01 per S.F. (New station- 36,750) - 6,400 exist. amtrak sta. - 3,400 s.f. exist. JCMTD)= 26,950 s.f.	Total Annual Expense - Design, Construction & Maint. (2017 Dollars)	Discounted Values	
																		3%	7%				3%	7%
2017	120,923	118,865															\$ -	\$ -	\$ -	\$0	\$0	\$0.00	\$0	\$0
2018	124,001	121,890															\$ -	\$ -	\$ -	\$6,605,469	\$0	\$6,605,469	\$6,413,077	\$6,173,336
2019	127,156	124,993															\$ -	\$ -	\$ -	\$8,353,237	\$0	\$8,353,237	\$7,873,727	\$7,296,041
2020	130,393	128,174															\$ -	\$ -	\$ -	\$3,341,295	\$94,459.75	\$3,435,755	\$3,144,202	\$2,804,599
2021	133,711	131,436	2,275	910	1024	228	114	15118	1,258,180	\$679,417	\$7,405	\$64,974	\$211,503	\$81,261	\$163,175	\$544,215	\$1,751,951	\$1,556,586	\$1,336,555	\$0	\$188,920	\$188,920	\$167,853	\$144,126
2022	137,114	134,781	2,333	933	1050	233	117	15420	1,289,867	\$696,528	\$7,592	\$66,636	\$216,885	\$83,307	\$167,348	\$544,215	\$1,782,512	\$1,537,610	\$1,270,906	\$0	\$188,920	\$188,920	\$162,964	\$134,697
2023	140,604	138,211	2,393	957	1077	239	120	15729	1,322,333	\$714,060	\$7,784	\$68,339	\$222,405	\$85,404	\$171,625	\$544,215	\$1,813,831	\$1,519,055	\$1,208,632	\$0	\$188,920	\$188,920	\$158,217	\$125,885
2024	144,182	141,728	2,454	982	1104	245	123	16043	1,355,767	\$732,114	\$7,979	\$70,094	\$228,065	\$87,563	\$176,032	\$544,215	\$1,846,062	\$1,501,017	\$1,149,635	\$0	\$188,920	\$188,920	\$153,609	\$117,650
2025	147,852	145,335	2,517	1007	1133	252	126	16364	1,389,790	\$750,486	\$8,179	\$71,879	\$233,869	\$89,761	\$180,515	\$544,215	\$1,878,904	\$1,483,224	\$1,093,539	\$0	\$188,920	\$188,920	\$149,135	\$109,953
2026	151,615	149,034	2,581	1032	1161	258	129	16691	1,424,565	\$769,265	\$8,384	\$73,704	\$239,821	\$92,007	\$185,099	\$544,215	\$1,912,494	\$1,465,768	\$1,040,270	\$0	\$188,920	\$188,920	\$144,791	\$102,760
2027	155,473	152,827	2,646	1059	1191	265	132	17025	1,460,288	\$788,556	\$8,593	\$75,579	\$245,925	\$94,314	\$189,809	\$544,215	\$1,946,990	\$1,448,744	\$989,751	\$0	\$188,920	\$188,920	\$140,574	\$96,037
2028	159,430	156,717	2,713	1085	1221	271	136	17366	1,496,670	\$808,202	\$8,810	\$77,489	\$252,184	\$96,664	\$194,605	\$544,215	\$1,982,169	\$1,431,961	\$941,714	\$0	\$188,920	\$188,920	\$136,479	\$89,754
2029	163,488	160,705	2,783	1113	1252	278	139	17713	1,534,483	\$828,621	\$9,031	\$79,477	\$258,602	\$99,106	\$199,596	\$544,215	\$2,018,647	\$1,415,838	\$896,303	\$0	\$188,920	\$188,920	\$132,504	\$83,883
2030	167,649	164,795	2,854	1141	1284	285	143	18067	1,572,988	\$849,413	\$9,258	\$81,500	\$265,183	\$101,593	\$204,677	\$544,215	\$2,055,839	\$1,399,926	\$853,100	\$0	\$188,920	\$188,920	\$128,645	\$78,395
2031	171,915	168,989	2,926	1171	1317	293	146	18429	1,612,509	\$870,755	\$9,490	\$83,577	\$271,932	\$104,145	\$209,895	\$544,215	\$2,094,009	\$1,384,386	\$812,093	\$0	\$188,920	\$188,920	\$124,898	\$73,266
2032	176,291	173,290	3,001	1200	1350	300	150	18797	1,652,891	\$892,561	\$9,729	\$85,700	\$278,853	\$106,753	\$215,226	\$544,215	\$2,133,037	\$1,369,115	\$773,111	\$0	\$188,920	\$188,920	\$121,260	\$68,473
2033	180,777	177,700	3,077	1231	1385	308	154	19173	1,694,526	\$915,044	\$9,974	\$87,890	\$285,950	\$109,443	\$220,726	\$544,215	\$2,173,243	\$1,354,293	\$736,153	\$0	\$188,920	\$188,920	\$117,728	\$63,994
2034	185,378	182,222	3,156	1263	1420	316	158	19557	1,737,332	\$938,159	\$10,224	\$90,143	\$293,227	\$112,207	\$226,384	\$544,215	\$2,214,559	\$1,339,844	\$701,073	\$0	\$188,920	\$188,920	\$114,299	\$59,807
2035	190,096	186,860	3,236	1294	1456	324	162	19948	1,780,745	\$961,602	\$10,479	\$92,427	\$300,690	\$115,011	\$232,120	\$544,215	\$2,256,544	\$1,325,482	\$667,630	\$0	\$188,920	\$188,920	\$110,970	\$55,894
2036	194,934	191,616	3,318	1327	1493	332	166	20347	1,825,271	\$985,646	\$10,744	\$94,770	\$308,342	\$117,887	\$238,004	\$544,215	\$2,299,609	\$1,311,435	\$635,861	\$0	\$188,920	\$188,920	\$107,738	\$52,238
2037	199,895	196,492	3,403	1361	1532	340	170	20754	1,871,454	\$1,010,585	\$11,013	\$97,203	\$316,189	\$120,870	\$244,113	\$544,215	\$2,344,188	\$1,297,200	\$605,783	\$0	\$188,920	\$188,920	\$104,600	\$48,820
2038	204,983	201,493	3,490	1396	1570	349	174	21169	1,918,334	\$1,035,900	\$11,290	\$99,672	\$324,236	\$123,897	\$250,313	\$544,215	\$2,389,524	\$1,284,487	\$577,101	\$0	\$188,920	\$188,920	\$101,554	\$45,627
2039	210,200	206,621	3,579	1432	1610	358	179	21592	1,966,538	\$1,061,930	\$11,575	\$102,211	\$332,488	\$127,011	\$256,691	\$544,215	\$2,436,121	\$1,271,393	\$549,865	\$0	\$188,920	\$188,920	\$98,596	\$42,642
2040	215,550	211,879	3,671	1468	1652	367	184	22024	2,016,217	\$1,088,757	\$11,900	\$104,830	\$340,950	\$130,219	\$263,267	\$544,215	\$2,483,829	\$1,258,535	\$523,956	\$0	\$188,920	\$188,920	\$95,724	\$39,852
** 2041	215,550	211,879	3,671	1468	1652	367	184	22465	2,018,772	\$1,090,137	\$11,605	\$104,830	\$340,950	\$130,384	\$263,267	\$544,215	\$2,485,388	\$1,222,646	\$489,986	\$0	\$188,920	\$188,920	\$92,936	\$37,245
2042	215,550	211,879	3,671	1468	1652	367	184	22914	2,021,378	\$1,091,544	\$11,620	\$104,830	\$340,950	\$130,552	\$263,267	\$544,215	\$2,486,979	\$1,325,482	\$458,224	\$0	\$188,920	\$188,920	\$90,229	\$34,808
2043	215,550	211,879	3,671	1468	1652	367	184	23372	2,024,036	\$1,092,979	\$11,636	\$104,830	\$340,950	\$130,724	\$263,267	\$544,215	\$2,488,601	\$1,153,951	\$428,526	\$0	\$188,920	\$188,920	\$87,601	\$32,531
2044	215,550	211,879	3,671	1468	1652	367	184	23840	2,026,747	\$1,094,443	\$11,652	\$104,830	\$340,950	\$130,899	\$263,267	\$544,215	\$2,490,256	\$1,121,086	\$400,758	\$0	\$188,920	\$188,920	\$85,049	\$30,403
2045	215,550	211,879	3,671	1468	1652	367	184	24316	2,029,512	\$1,095,937	\$11,668	\$104,830	\$340,950	\$131,078	\$263,267	\$544,215	\$2,491,945	\$1,089,171	\$374,794	\$0	\$188,920	\$188,920	\$82,572	\$28,414
2046	215,550	211,879	3,671	1468	1652	367	184	24803	2,032,333	\$1,097,460	\$11,684	\$104,830	\$340,950	\$131,260	\$263,267	\$544,215	\$2,493,666	\$1,058,178	\$350,517	\$0	\$188,920	\$188,920	\$80,167	\$26,555
2047	215,550	211,879	3,671	1468	1652	367	184	25299	2,035,210	\$1,099,013	\$11,701	\$104,830	\$340,950	\$131,446	\$263,267	\$544,215	\$2,495,423	\$1,028,081	\$327,816	\$0	\$188,920	\$188,920	\$77,832	\$24,818
2048	215,550	211,879	3,671	1468	1652	367	184	25805	2,038,145	\$1,100,598	\$11,719	\$104,830	\$340,950	\$131,635	\$263,267	\$544,215	\$2,497,214	\$998,854	\$306,590	\$0	\$188,920	\$188,920	\$75,565	\$23,194
2049	215,550	211,879	3,671	1468	1652	367	184	26321	2,041,138	\$1,102,215	\$11,736	\$104,830	\$340,950	\$131,829	\$263,267	\$544,215	\$2,499,041	\$970,470	\$286,743	\$0	\$188,920	\$188,920	\$73,364	\$21,677
2050	215,550	211,879	3,671	1468	1652	367	184	26847	2,044,191	\$1,103,863	\$11,754	\$104,830	\$340,950	\$132,026	\$263,267	\$544,215	\$2,500,905	\$942,907	\$268,184	\$0	\$188,920	\$188,920	\$71,228	\$20,259
2051	215,550	211,879	3,671	1468	1652	367	184	27384	2,047,306	\$1,105,545	\$11,772	\$104,830	\$340,950	\$132,227	\$263,267	\$544,215	\$2,502,806	\$916,140	\$250,830	\$0	\$188,920	\$188,920	\$69,153	\$18,933
2052	215,550	211,879	3,671	1468	1652	367	184	27932	2,050,482	\$1,107,260	\$11,791	\$104,830	\$340,950	\$132,432	\$263,267	\$544,215	\$2,504,745	\$890,145	\$234,602	\$0	\$188,920	\$188,920	\$67,139	\$17,695
2053	215,550	211,879	3,671	1468	1652	367	184	28490	2,053,722	\$1,109,010	\$11,810	\$104,830	\$340,950	\$132,641	\$263,267	\$544,215	\$2,506,723	\$864,901	\$219,427	\$0	\$188,920	\$188,920	\$65,183	\$16,537
2054	215,550	211,879	3,671	1468	1652	367	184	29060	2,057,027	\$1,110,795	\$11,829	\$104,830	\$340,950	\$132,855	\$263,267	\$544,215	\$2,508,741	\$840,385	\$205,237	\$0	\$188,920	\$188,920	\$63,285	\$15,455
2055	215,550	211,879	3,671	1468	1652	367	184	29642	2,060,398	\$1,112,615	\$11,849	\$104,830	\$340,950	\$133,073	\$263,267	\$544,215	\$2,510,799	\$816,577	\$191,968	\$0	\$188,920	\$188,920	\$61,442	\$14,444
2056	215,550	211,879	3,671	1468	1652	367	184	30234	2,063,837	\$1,114,472	\$11,869	\$104,830	\$340,950	\$133,295	\$263,267	\$544,215	\$2,512,898	\$793,456	\$179,559	\$0	\$188,920	\$188,920	\$59,652	\$13,499
2057	215,550	211,879	3,671	1468	1652	367	184	30839	2,067,344	\$1,116,366	\$11,889	\$104,830	\$340,950	\$133,521	\$263,267	\$544,215	\$2,515,038	\$771,002	\$167,955	\$0	\$188,920	\$188,920	\$57,915	\$12,616
2058	215,550	211,879	3,671	1468	1652	367	184	31456	2,070,921	\$1,118,297	\$11,910	\$104,830	\$340,950	\$133,752	\$263,267	\$544,215	\$2,517,222	\$749,196	\$157,104	\$0	\$188,920	\$188,920	\$56,228	\$11,791
2059	215,550	211,879	3,671	1468	1652	367	184	32085	2,074,570	\$1,120,268	\$11,932	\$104,830	\$340,950	\$133,988	\$263,267	\$544,215	\$2,519,450	\$728,018	\$146,956	\$0	\$188,920	\$188,920		

Southern Illinois Multi-Modal Station

Illinois Crashes

(www.idot.illinois.gov/transportation-system/safety/Illinois-Roadway-Crash-Data)

Year	Total Crashes	Injury Crashes	Fatalities	Vehicle Miles Traveled	Crashes/ Million VMT	Total Estimated Cost (IL)	Average Cost/Crash
2014	296,049	61,084	845	105,031,931,935	2.8187		\$ -
2013	285,477	61,001	895	105,475,516,461	2.7066		\$ -
2012	274,111	60,252	886	104,456,093,156	2.6242		\$ -
2011	281,788	84,172	835	103,369,436,684	2.7260	\$ 5,500,000,000	\$ 19,518.22
2010	289,260	88,937	858	105,742,171,123	2.7355	\$ 5,300,000,000	\$ 18,322.62
2009	292,106	89,090	832	105,734,665,833	2.7626	\$ 5,300,000,000	\$ 18,144.10
2008	408,258	94,021	950	105,636,173,601	3.8648	\$ 6,200,000,000	\$ 15,186.48
2007	422,778	103,156	1,126	107,403,168,918	3.9364	\$11,500,000,000	\$ 27,201.04
2006	408,670	106,918	1,136	106,812,529,371	3.8260	\$10,700,000,000	\$ 26,182.49
Average (9 years)	328,722	83,181	929	105,517,965,231	3.1112		\$ 20,759.16

Southern Illinois Multi-Modal Station: Supporting Information for Benefit-Cost Analysis

From MWRRI Benefit Cost & Economic Analysis (November 2006)
 Savings of \$23.43/passenger trip for trips diverted from car to rail (congestion) - page 5
 For emissions savings see the Emissions Worksheet in the Excel BOC

 Adjust by 2%/year for 10 years:
 Congestion = \$ 28.56

Distances (miles):
 Carbondale --> Chicago = 310
 Carbondale --> Champaign 181
 Carbondale --> Memphis = 210
 Carbondale --> New Orleans = 616

LEED Certified buildings
 Can see 25% to 30% savings in energy use/year

Average US Light Duty Vehicle Fuel Efficiency 21.6 mpg
 (from US DOT - Bureau of Transportation Statistics)

From the City of Carbondale
 \$7.01/SF for current O&M costs for historic station
 (Includes Admin, Management Fees, Contract Cleaning, Salaries, Benefits, Building Maint,
 HVAC maint, Electrical maint, plumbing maint, grounds maint, security, parking garage)

MidWest Average Fuel Costs
 (from US Energy Information Administration)

Gas-All Grades	2010	\$ 2.779	
	2011	\$ 3.532	
	2012	\$ 3.605	
	2013	\$ 3.515	
	2014	\$ 3.360	
	2015	\$ 2.411	
Average		\$ 3.200	

Tourism Revenue
 From Jim Bowmen @ Renew Moline
 IL Tourists spend \$127/person/day (2008) (for 2016, increase the 2008 value by 2.2%/year = \$151)
 Use 25% of new riders will be new tourists to Carbondale from Chicago and 20% from Champaign
 Average Stay is 2.5 days

Illinois Crashes
 (www.idot.illinois.gov/transportation-system/safety/Illinois-Roadway-Crash-Data)
 See IL Crashes Tab for details

Value of Time:		% Business	% Other
Business: \$28.50	Carbondale/Chicago =	40%	60%
Commuter \$17.40	Carbondale/Champaign =	15%	85%
Pleasure: \$17.40	Carbondale/Memphis =	5%	95%
	Carbondale/New Orleans =	2%	98%

New Downtown Hotel:
 The average hotel occupancy rate is 65.5%. The new hotel will average 70 overnight stays each day. The most comparable hotel in the area books 60% of its rooms for business purposes. Given the hotel's proximity to the train station, 25% of those business related bookings will be attributable to this project. The GSA calculates the overnight stay per diem rate for Carbondale IL to be \$91. The GSA calculates the M&IE per diem rate to be \$51 per day.

 70 overnight stays per day *
 60% business purposes = 42 rooms booked *
 25% attributable to this project = 10.5 rooms per night * \$91 per night = \$955.50 * 365 nights per year = \$348,757.50 per year

 10.5 rooms per night * \$51 per day = \$535.50 per day * 365 days per year = \$195,457.50 per year

Total: \$544,215 per year

Passenger Rail Mobility Savings:	Per Hour	Business		Other	
1-way Saver/Value Coach Reserved Ticket (Carbondale to/from Chicago) =	\$34				
Amtrak Time (hours) =	5.50	\$157		\$95.70	
Drive in Passenger Vehicle:	\$167				
Savings Per Trip:	\$133				
1-way Value Coach Reserved Ticket (Carbondale to/from Champaign) =	\$20				
Amtrak Time (hours) =	2.75	\$78		\$47.85	
Drive in Passenger Vehicle:	\$98				
Savings Per Trip:	\$78				
1 way Saver Coach Reserved Ticket (Carbondale to/from Memphis) =	\$31				
Amtrak Time (hours) =	5	\$143		\$87.00	
Drive in Passenger Vehicle:	\$113.40				
Savings Per Trip =	\$82.40				
1 way Saver Coach Ticket (Carbondale to/from New Orleans) =	\$ 82.00				
Amtrak Time (hours) =	14.0	\$399		\$243.60	
Drive in Passenger Vehicle =	\$333				
Savings per Trip =	\$251				

Note: Amtrak ticket prices from 2016. Current IRS Mileage Rate: