

Midway Sewer Expansion Economic Impact Analysis



Executive Summary

This report describes the potential economic and fiscal impact to Boone County by extending the Henderson Branch sewer line to serve businesses in the Midway area. The estimated cost for the sewer line expansion is between \$4.5 and \$5 million. The analysis assumes that existing businesses in the Midway area that access the extended sewer line would be annexed and pay the City of Columbia annual taxes and utility fees moving forward. Additionally, low-growth and high-growth scenarios were analyzed in a modeling tool, IMPLAN, to describe the potential economic impact of new business growth in the area given the new sewer services. The analysis covers ten years, from 2027 to 2036, assuming sewer line construction activities begin in 2027. The Economic Impact Methodology section provides additional details on modeling and terms used in this report.

Existing Midway businesses, to be served by the new sewer line, provided sales and tax figures which were used to estimate new fiscal revenue to the City of Columbia following annexation—assumed to occur by 2029. City officials provided figures for sewer connection fees, stormwater and solid waste services that existing businesses would pay upon annexation. Additional information was collected from interviews with local businesses and city officials, as well as a review of public and proprietary data sources, to build out reasonable business growth scenarios to model. Columbia’s growing population, coupled with the expansion of I-70 over the next several years, has increased demand for Midway area development. However, existing and new business growth is limited by insufficient sewer infrastructure which the Henderson Branch sewer line extension would resolve.

Low Growth Economic Impact Summary

Interviewed business owners noted that developers were interested in Midway area properties for commercial development, including retail, entertainment and restaurant activities, once there was sufficient sewer infrastructure. To be conservative in the low-growth scenario, only one new business – a limited-service restaurant – was assumed to locate in the annexed area following the sewer line installation. See Exhibit 3 for timing assumptions.

Under the modest low growth scenario, an annual average of 29 jobs is expected, along with a cumulative \$8.3 million in labor income over 10 years (See Exhibit 1. All money figures are in 2024 dollars). Boone County's Gross Domestic Product (GDP) would be a cumulative \$14.4 million larger over the period, with Gross Output gains of \$32 million. The combined county/city fiscal benefit over ten years is \$4 million.

**Exhibit 1:
Low Growth Impact on Boone County**

Total Low Growth Scenario Impacts over Ten Years				
Impact	Avg. Annual Jobs	Income (\$M)	GDP (\$M)	Gross Output (\$M)
Direct	19.8	\$4.8	\$8.0	\$18.5
Indirect	5.8	\$2.3	\$3.9	\$9.1
Induced	3.2	\$1.3	\$2.5	\$4.4
Totals	28.8	\$8.3	\$14.4	\$32.0
City/County Fiscal Benefit (\$M):				\$4.0

High Growth Economic Impact Summary

The high-growth scenario adds a commercial shopping center development to the area. The scenario includes a mid-sized grocery store, two small retail stores, a full-service restaurant and a small professional services business. Interviewed business owners believed this type of development is very reasonable given the sewer improvements.

In this scenario, there are 170 average annual jobs supported by these business activities, with a cumulative \$59 million in labor income (See Exhibit 2). Gains in GDP (\$91.6M) and Gross Output (\$199.3M) are also expected. The combined county/city fiscal benefit over ten years is \$8.8 million.

**Exhibit 2:
High Growth Impact on Boone County**

Total High Growth Scenario Impacts over Ten Years				
Impact	Avg. Annual Jobs	Income (\$M)	GDP (\$M)	Gross Output (\$M)
Direct	122.5	\$38.3	\$53.5	\$114.2
Indirect	27.0	\$11.9	\$20.5	\$51.6
Induced	20.2	\$8.9	\$17.5	\$33.5
Totals	169.6	\$59.0	\$91.6	\$199.3
City/County Fiscal Benefit (\$M):				\$8.8

Background

The City of Columbia, hereafter “City”, sought to understand the potential economic and fiscal impacts of expanding the Henderson Branch sewer line to serve Midway area businesses currently facing growth limitations due to the existing sewer infrastructure. The City conducted a 2016 sewer line expansion analysis of direct fiscal impacts (memos [here](#)) but many factors have changed since then, including different construction specifications, annexations and changing Midway business activities. This 2024 analysis updates the direct fiscal impacts to the City based on current Midway area business activities and includes the potential economic benefits under two growth scenarios. The direct fiscal and scenario timing assumptions are available in Exhibit 3.

Exhibit 3: Direct Fiscal and Scenario Timing Assumptions

Direct Fiscal Impact Assumptions										
Direct Fiscal Benefits	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	Existing Firms pay Columbia Sales Taxes, Other Taxes & Utilities Fees after Annexation in 2029									
Direct Fiscal Costs	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	Sewer Installation Costs									
	Additional Sewer Maintenance Costs (Annual)									
Two Scenarios for Modeling										
Low Growth Scenario	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	Sewer Line—Construction									
		Limited Serv. Restaurant—Const.	Limited Service Restaurant—Operations							
High Growth Scenario	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	Sewer Line—Construction									
		Limited Serv. Restaurant—Const.	Limited Service Restaurant—Operations							
		Shopping Center—Const.								
			General Merch. Store—Operations							
			Clothing Store—Operations							
				Small Office (Accounting)—Operations						
				Full-Service Restaurant—Operations						
				Grocery Store—Operations						

Direct City of Columbia Fiscal Impacts

City officials provided an updated cost estimate for the sewer line expansion of \$4.5 to \$5 million based on revised specifications. Annual sewer line maintenance of \$7,665 is expected after the project is completed. Assuming project approval in 2024, it is assumed that the construction of this line will be completed by the end of 2028 and annual maintenance will begin in 2029.

New direct fiscal revenue estimates assume that Midway area property owners who benefit from new sewer line access would agree to City annexation once the project is completed. In this situation, the City would gain new sales, hotel, gross receipts, utility and property taxes/fees from the existing businesses starting in 2029. Additionally, the City would

gain directly from sewer, stormwater and solid waste initial connection and annual service revenues. Based on the information provided by existing Midway area businesses and City officials, and assuming 2% annual sales growth, cumulative fiscal revenues of \$2.9 million is expected over the years 2029-36. This figure deducts the annual \$7,665 in sewer line maintenance cost.

Boone County Economic Impacts

A Boone County IMPLAN economic model was used to analyze the benefits of two growth scenarios following the completion of the sewer line. Models are valuable in understanding the impact of economic activities because they take direct business information, such as sales and employment, and estimate the supply-chain (indirect) and worker spending (induced) effects that occur within the county. The model can also estimate the economic impacts to the state of Missouri from spending outside of the county (provided in the Appendix). Additional details about the IMPLAN model and terminology are provided in the Economic Impact Methodology section.

The modeling was separated into two phases—a *construction* and *operations* phase—to distinguish impacts between short-term and long-term economic activities. The *construction phase* includes the construction of the sewer line, slated to begin in 2027 and estimated to cost between \$4.5 and \$5 million over a two-year period (2027-28). The construction of businesses in the two scenarios would also be included in this phase. The following eight years (2029-36) are referred to as the *operations phase*—the period when existing businesses have been annexed into the City and additional businesses begin operating in the newly served area.

The low-growth scenario envisions the construction of a limited-service restaurant in 2028, with operations beginning in 2029. The high growth scenario includes the limited-service restaurant and adds the construction of a shopping center with a grocery store anchor. The shopping center construction would start in 2028 and be completed in 2029. A total of five businesses would operate in the shopping center. Two businesses, a general merchandise and clothing store, would open in 2029. The remaining three businesses, an accounting office, a full-service restaurant and a grocery store would be operational in 2030. Average job levels for these businesses are based on analysis of 2023 U.S. Bureau of Labor Statistics data on establishment employment. A mid-sized grocery store was considered more reasonable than a larger operation given the lower population density of the surrounding area.

The results for both phases are noted in Exhibit 4. Below is a summary of the phases along with the range of benefits.

- The *construction* phase, which includes the sewer line construction and buildings proposed in each scenario, is anticipated to create an annual average of 23 to 93 jobs in Boone County over the two- to three-year period. This activity would support between \$10 million and \$40.6 million in cumulative new Boone County gross sales.
- The *operations* phase includes the increased sales of existing businesses and new business operations in the Midway area. The operation of existing businesses annexed into the city, and additional businesses in the two scenarios, are estimated to support an annual average of 30 to 177 jobs in Boone County between 2029 and 2036. Cumulative gross sales would increase by \$22 to \$158.6 million over the same time.
- The combined phases create an annual average of 29 to 170 jobs over the 10-year period, and between \$32 and \$199.3 million in cumulative Boone County gross sales. The city/county fiscal benefit, including the direct gains to Columbia from existing business annexation, ranges from \$4 million in the low-growth scenario to \$8.75 million in the high-growth scenario.

Exhibit 4. Economic & Fiscal Impacts for Boone County

Low Growth Scenario					High Growth Scenario				
Construction Phase Impact (2027-2028)					Construction Phase Impact (2027-2029)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output	Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	13.4	\$1,792,810	\$3,247,600	\$6,219,892	Direct	64.2	\$11,042,818	\$12,721,452	\$24,613,730
Indirect	5.5	\$641,800	\$1,043,889	\$2,281,165	Indirect	11.8	\$2,075,684	\$3,495,758	\$7,575,205
Induced	4.6	\$431,563	\$849,113	\$1,531,668	Induced	17.0	\$2,384,038	\$4,691,550	\$8,461,053
Totals	23.5	\$2,866,173	\$5,140,601	\$10,032,725	Totals	93.0	\$15,502,540	\$20,908,759	\$40,649,988
Operation Phase Impact (2029-2036)					Operation Phase Impact (2029-2036)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output	Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	21.5	\$3,031,991	\$4,769,165	\$12,256,395	Direct	129.0	\$27,244,262	\$40,800,632	\$89,583,734
Indirect	5.9	\$1,632,048	\$2,902,414	\$6,840,617	Indirect	29.3	\$9,779,945	\$17,044,557	\$43,998,411
Induced	2.9	\$819,263	\$1,611,918	\$2,907,662	Induced	18.8	\$6,509,992	\$12,808,351	\$25,034,746
Totals	30.2	\$5,483,302	\$9,283,497	\$22,004,674	Totals	177.2	\$43,534,199	\$70,653,539	\$158,616,891
Total Impact (2027-2036)					Total Impact (2027-2036)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output	Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	19.8	\$4,824,801	\$8,016,765	\$18,476,288	Direct	122.5	\$38,287,080	\$53,522,084	\$114,197,464
Indirect	5.8	\$2,273,848	\$3,946,303	\$9,121,782	Indirect	27.0	\$11,855,629	\$20,540,315	\$51,573,616
Induced	3.2	\$1,250,826	\$2,461,030	\$4,439,330	Induced	20.2	\$8,894,030	\$17,499,900	\$33,495,799
Totals	28.8	\$8,349,475	\$14,424,098	\$32,037,400	Totals	169.6	\$59,036,739	\$91,562,299	\$199,266,879
City/County Fiscal Benefit (2027-2036)					City/County Fiscal Benefit (2027-2036)				
\$4,017,794					\$8,751,835				

Economic Impact Methodology

The job, labor income, GDP, and gross output figures for each scenario were derived from an input-output economic model, called IMPLAN, that is commonly used by development professionals and researchers to understand the broader impacts of business activities. IMPLAN data are updated annually from three main sources: the U.S. Bureau of Labor Statistics, the Bureau of Economic Analysis and the Census Bureau.

The IMPLAN model provides county-level tax revenue (fiscal) estimates primarily based on U.S. Census Bureau state-level data on sales, income, property and other taxes that are allocated to counties using a variety of factors. Due to this tax allocation process, IMPLAN figures should be considered a broad estimate. Several steps were taken in this analysis to improve the fiscal estimates to include:

- Calculating direct fiscal benefits based on business- and City utility-provided figures instead of IMPLAN estimates.
- Removing direct sales taxes generated in IMPLAN from the sewer line construction since materials are tax-exempt as a public entity contracting for construction services.

The business development scenarios were informed by several interviews with business owners and City officials to understand what type of developments are most likely in the Midway area given the sewer infrastructure improvements. While the researchers believe the two growth scenarios are sensible and conservative given the development interests and Columbia's growth, future projections and timing of business activities cannot be predicted with certainty. The scenarios serve as guidance to the range of economic impacts that could be reasonably expected within the coming years.

Regional Spending Effects

Economic models track the flow of spending that moves around an economy through primary relationships between businesses and consumers. Models consider what companies typically purchase to produce goods or services, where those companies are located and how workers spend the income they earn from making consumer products and services. The models follow these spending patterns to understand the larger economic impacts that circulate within a county and to what extent income leaks out due to imports. Spending effects describe how a business' final sales cause money to flow to regional supply chains and consumer-oriented firms to support additional jobs, wages, profits and taxes. These spending impacts can be broken out by direct, ripple and total effects.

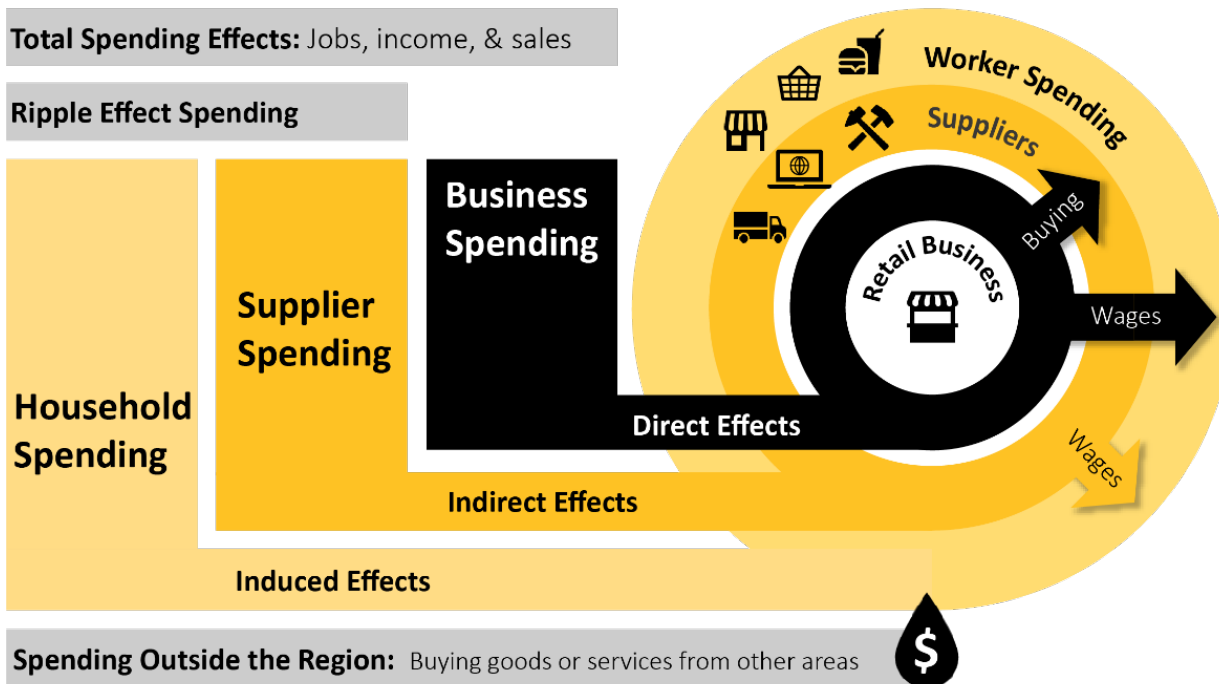
Direct Effects include the revenue, wages and jobs that come from selling a product or service for consumption. For a retail business, this includes the sale of goods. To make these sales, the business owners invest in buildings, equipment and technology; buy supplies and services; and employ full- and part-time workers. Direct effects drive the other ripple spending effects in a county's economy.

Ripple Effects are impacts of spending that have two parts:

- *Indirect effects* are impacts from supply-chain purchases. For example, a retailer buys supplies from a wholesaler, which purchases goods from a manufacturer. At each step in the supply chain, some purchases are made outside the county or state for specialized inputs or price considerations. That spending leaks out of the county during each cycle of purchasing.
- *Induced effects* capture the household spending of individuals who own and work for these retailers or suppliers. For example, the workers purchase groceries and clothing in the local economy.

Total Effects combine the direct effect of jobs and income from a business or industry with the indirect effects of supplier and induced household spending within a county; these effects support additional employment and wealth. The diagram of spending flows in Exhibit 5 further illustrates the regional spending ripple effect that input-output models describe.

Exhibit 5. Economic Model of Spending Flows: Retail Business Example



Economic Analysis Terms

The IMPLAN model shows how direct spending can have monetary and labor ripple effects that benefit businesses and workers in a community. Key spending effect figures include:

- **Gross output** (or **total sales**) estimates the total value of all sales, including the input cost of making a good or service along with the money received when that product is sold for final use.
- **Gross domestic product (GDP)** is the value-added part of total sales (or **final sales**). Value-added deducts the cost of goods and services from total sales to show what new money is left to pay wages, profits, rents, interests and taxes.
- **Labor income**, which captures wages, benefits and owner pay, is a part of the value-added impact. It represents all spending, including health, retirement and other benefits, directed to workers and income earned by proprietors.
- **Jobs** estimates annual average full- or part-time jobs needed for business operations.

Economic Model Limitations

Although IMPLAN is an excellent tool for understanding spending impacts, input-output models have some underlying limitations, including these:

- **No supply constraints:** The model assumes no supply constraints on products, services or labor that would alter industry inputs. Although the model can be adjusted if specific constraints are known, rarely will such detailed industry information be available, and those constraints can change periodically depending on broader economic conditions.
- **Static input structure:** The model is based on national survey information and assumes that the type and ratio of inputs needed by an industry are fixed. The model also assumes a constant return to scale and technology use.
- **Backward-linked structure:** The model considers an industry's input supply chain effects and does not account for forward-linkage effects such as sales cannibalization from existing businesses.

Additional considerations

Interviews with business owners and City officials provided important details to inform the business development scenarios. Some information was noteworthy even if the activity could not be modeled for this study:

- Interviewed business owners noted the expansion of I-70 to three lanes across Missouri, to include parallel outer road improvements, is expected to increase demand for commercial development in the Midway area. The construction timing, costs, and influence on development will be considerable but those details and estimates are not available.
- There are likely environmental and health benefits to the sewer line expansion. For example, reducing lagoon sewer overflow during heavy storms will improve the water quality within the watershed. These benefits can be substantial but are difficult to quantify without a comprehensive water quality study.

Appendix—Boone County and Missouri Economic Impacts by Scenario & Phase

Construction Phase Impacts

Low Growth Scenario

Boone County				
Construction Phase Impact (2027-2028)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	13.4	\$1,792,810	\$3,247,600	\$6,219,892
Indirect	5.5	\$641,800	\$1,043,889	\$2,281,165
Induced	4.6	\$431,563	\$849,113	\$1,531,668
Totals	23.5	\$2,866,173	\$5,140,601	\$10,032,725

Rest of Missouri				
Construction Phase Impact (2027-2028)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Indirect	2.0	\$289,147	\$477,733	\$935,808
Induced	1.8	\$203,128	\$374,171	\$657,093
Totals	3.8	\$492,274	\$851,904	\$1,592,902

Combined				
Construction Phase Impact (2027-2028)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	13.4	\$1,792,810	\$3,247,600	\$6,219,892
Indirect	7.5	\$930,947	\$1,521,621	\$3,216,973
Induced	6.4	\$634,691	\$1,223,284	\$2,188,761
Totals	27.3	\$3,358,447	\$5,992,505	\$11,625,627

High Growth Scenario

Boone County				
Construction Phase Impact (2027-2029)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	64.2	\$11,042,818	\$12,721,452	\$24,613,730
Indirect	11.8	\$2,075,684	\$3,495,758	\$7,575,205
Induced	17.0	\$2,384,038	\$4,691,550	\$8,461,053
Totals	93.0	\$15,502,540	\$20,908,759	\$40,649,988

Rest of Missouri				
Construction Phase Impact (2027-2029)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Indirect	3.4	\$749,172	\$1,286,648	\$2,637,752
Induced	3.9	\$654,100	\$1,204,887	\$2,115,960
Totals	7.3	\$1,403,272	\$2,491,536	\$4,753,711

Combined				
Construction Phase Impact (2027-2029)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	64.2	\$11,042,818	\$12,721,452	\$24,613,730
Indirect	15.2	\$2,824,856	\$4,782,406	\$10,212,957
Induced	20.9	\$3,038,138	\$5,896,437	\$10,577,013
Totals	100.3	\$16,905,812	\$23,400,295	\$45,403,699

Operations Phase Impacts

Low Growth Scenario

Boone County				
Operation Phase Impact (2029-2036)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	21.5	\$3,031,991	\$4,769,165	\$12,256,395
Indirect	5.9	\$1,632,048	\$2,902,414	\$6,840,617
Induced	2.9	\$819,263	\$1,611,918	\$2,907,662
Totals	30.2	\$5,483,302	\$9,283,497	\$22,004,674

Rest of Missouri				
Operation Phase Impact (2029-2036)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Indirect	0.9	\$432,149	\$802,720	\$1,706,064
Induced	1.1	\$357,617	\$658,749	\$1,156,857
Totals	2.0	\$789,766	\$1,461,469	\$2,862,920

Combined				
Operation Phase Impact (2029-2036)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	21.5	\$3,031,991	\$4,769,165	\$12,256,395
Indirect	6.8	\$2,064,197	\$3,705,134	\$8,546,680
Induced	3.9	\$1,176,880	\$2,270,667	\$4,064,519
Totals	32.1	\$6,273,068	\$10,744,966	\$24,867,595

High Growth Scenario

Boone County				
Operation Phase Impact (2029-2036)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	129.0	\$27,244,262	\$40,800,632	\$89,583,734
Indirect	29.3	\$9,779,945	\$17,044,557	\$43,998,411
Induced	18.8	\$6,509,992	\$12,808,351	\$25,034,746
Totals	177.2	\$43,534,199	\$70,653,539	\$158,616,891

Rest of Missouri				
Operation Phase Impact (2029-2036)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Indirect	8.1	\$3,485,049	\$5,607,285	\$14,825,790
Induced	7.9	\$2,609,913	\$4,807,612	\$11,384,426
Totals	16.0	\$6,094,962	\$10,414,897	\$26,210,216

Combined				
Operation Phase Impact (2029-2036)				
Impact	Avg. Annual Jobs	Labor Income	GDP	Gross Output
Direct	129.0	\$27,244,262	\$40,800,632	\$89,583,734
Indirect	37.4	\$13,264,994	\$22,651,842	\$58,824,201
Induced	26.8	\$9,119,905	\$17,615,963	\$36,419,172
Totals	193.2	\$49,629,161	\$81,068,437	\$184,827,107