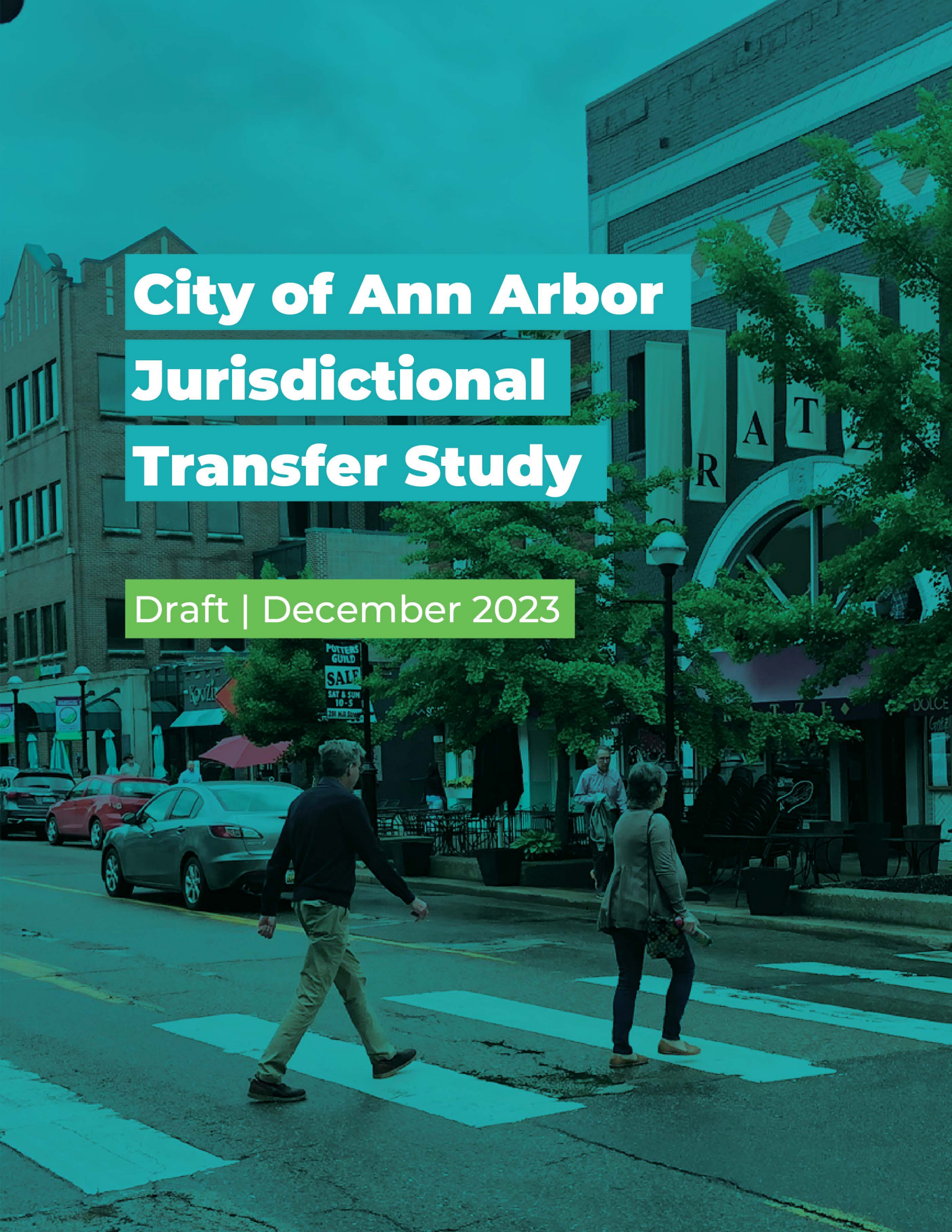

City of Ann Arbor Jurisdictional Transfer Study

Draft | December 2023

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Executive Summary

Four prominent corridors within the City of Ann Arbor, N Main Street, Jackson Avenue, Huron Street, and Washtenaw Avenue, are owned and controlled by the Michigan Department of Transportation (MDOT). These state-owned roads (trunklines) serve important transportation functions, connecting the downtown and civic center to residential neighborhoods as well as the interstate system and neighboring communities. They serve everyday needs for local neighborhoods and define people's experiences in those places while also serving as essential routes for emergency services, truck traffic and deliveries, and transit.

City agencies and, more broadly, the community, have little control over how the state trunklines are designed and operated. Each corridor is currently designed primarily to move vehicles efficiently and with limited attention to access and comfort of other users including pedestrians, bicyclists, and transit users. The City's lack of control over key decisions about the design and operations of these roadways limits their ability to achieve a transportation system that is supportive of the community's bold ambitions to achieve carbon neutrality by 2030 and Vision Zero by 2025.

This report summarizes a comprehensive study to evaluate the benefits and the costs of taking jurisdiction over these roadways, the process of such a transfer, and information required to begin conversations with the Michigan Department of Transportation (MDOT). The outcomes of the study will assist the City in making an informed decision about the future of these roadways.

The Study conducts a benefit cost analysis of each corridor based on conceptual improvements that the City of Ann Arbor could achieve with a jurisdictional transfer. A benefit cost analysis assigns monetary values to benefits based on national research and USDOT guidance, however, the majority of the benefits will not lead directly to monetary capture or savings by the City. Many benefits are in the form of improved health, economic development opportunities, cost savings for residents, and increased mobility, which may lead to indirect monetary value to the City. The costs reflect all costs incurred by the City to own and operate the roadway, which includes the cost to the City for making the conceptual improvements to the roadways, routine maintenance costs (such as snow plowing), and the annualized capital costs to keep the roads in a state of good repair.

The benefit cost analysis results in a benefit cost ratio, which are summarized below for each corridor. Benefit cost ratios above 1 mean that the benefits outweigh the costs. A range is given for each benefit cost ratio to reflect a high- and low-cost estimate for each segment. The majority of the corridor segments yield a benefit cost ratio above 1.0 for a low-cost scenario, but only half show a positive benefit at the high-cost scenarios.

Segment	***Benefit-Cost Ratio Range***
N Main St (M-14 – Huron)	0.78 - 0.98
Jackson Ave (I-94 – Huron)	0.01 - 0.02
Huron St (Jackson – 1st)	1.50 - 1.88
Huron St (1st – Washtenaw)	1.61 - 2.03
Washtenaw Ave (Huron – E Stadium)	1.23 - 1.55
Washtenaw Ave (E Stadium – US-23)	0.97 - 1.23

Benefit-Cost Analysis Summary

While the quantifiable benefits of assuming ownership of each segment may not consistently outweigh the costs, the direct and ancillary benefits of being able to make decisions about these roadways should also be considered when deciding whether to pursue a jurisdictional transfer. The principal benefit of a jurisdictional transfer is that the city has complete control over the design, maintenance, operations, and function of the roadway. With control over the roadway, there is far greater potential to make improvements to the roadways that align with the city's existing plans and goals, such as Ann Arbor's Climate Change Plan, Vehicle Miles Travelled (VMT) reduction goal, and Vision Zero goal.

Should Ann Arbor decide to pursue a jurisdictional transfer they will need to approach MDOT with a proposal. The work of this study can serve as a starting point for that proposal and for negotiations with MDOT. Historically, the jurisdictional transfer process takes years, and many details must be agreed upon before a transfer can take place. A Memorandum Of Understanding (MOU) signed by both parties will document the agreement.

Statement of Purpose

State owned roads in the City of Ann Arbor (City) are a barrier to building comprehensive safety interventions and meaningfully increasing connectivity on some of the City's Tier 1 Focus Corridors of N Main Street, Jackson Avenue, Huron Street, and Washtenaw Avenue. These "State Trunkline Highways", as state owned roads are known, hinder the City from pursuing higher-level transit operations, filling in low-stress bike network gaps, and corridor-wide opportunities to provide better pedestrian connections and safer crossings.

This study's purpose is to inform The City of Ann Arbor about:

- The process of jurisdictional transfers.
- The effect that a jurisdictional transfer would have on annual Act 51 and maintenance funding along the corridors.
- The long-term capital and maintenance costs that the City will encumber should it complete a jurisdictional transfer.
- What benefits could be gained by the City from a transfer and subsequent redesign of corridors for safety, transit, biking, and walking.

Background

The City of Ann Arbor has jurisdiction over all the roads within its boundaries except for three state trunkline highways which are owned and maintained by the Michigan Department of Transportation (MDOT). The three trunklines, shown below, are designated by the State of Michigan as US-23 Business Loop (N Main Street), Interstate-94 Business Loop (Jackson Avenue/Huron Street), and US-23/I-94 Business Loop (Huron Street/Washtenaw Avenue). Each radiates out from the city center and traverses downtown.

The roads are crucial arterials, connecting downtown with surrounding neighborhoods and providing access to the region's freeways. They serve as emergency routes and truck routes. Each roadway is high capacity and high speed, designed and operated primarily to move vehicles efficiently and with limited attention to access and comfort of other users including pedestrians, bicyclists, and transit users. The roadways present a heightened need for safety interventions and other enhancements. Washtenaw Avenue is also Ann Arbor's main transit corridor and connects to the neighboring City of Ypsilanti.

Ann Arbor's Downtown Development Authority (DDA) oversees public improvements within the downtown area and thus has an interest and a stake in the portions of the state trunklines that are within their boundary. They are guided by a mission to "undertake public improvements that have the greatest impact in strengthening the downtown area" and have made significant investments in the design of downtown roadways to provide better multi-modal access and a better experience overall on downtown streets. The DDA boundary is shown in blue on the map below.

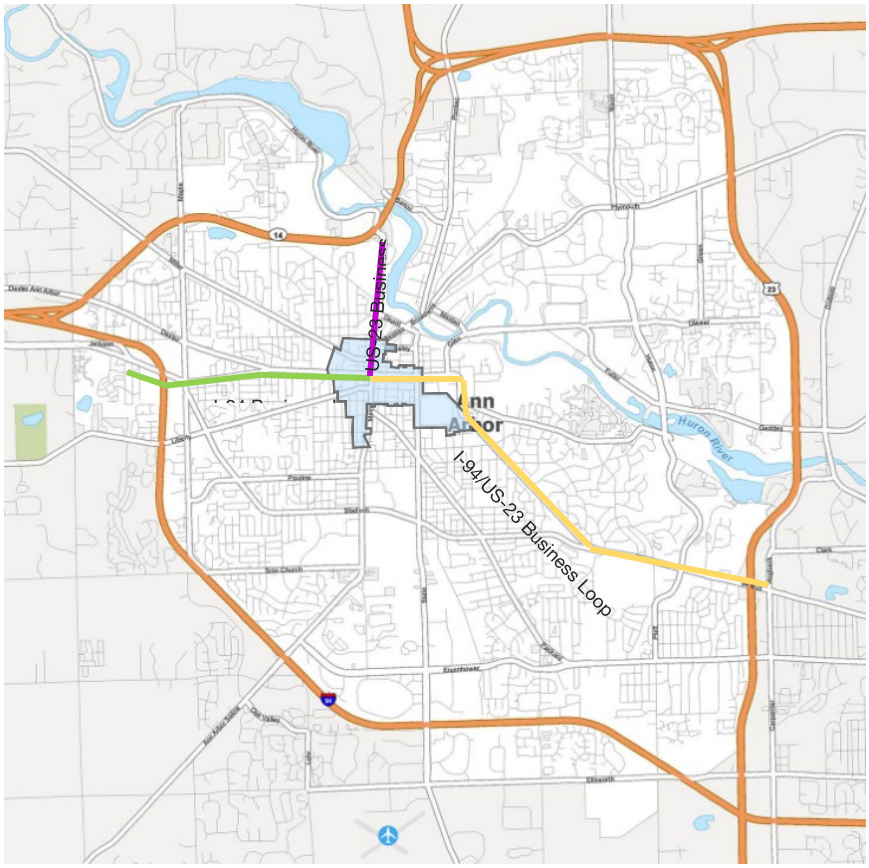

Figure 1: Map of State Trunkline Highways Through the City of Ann Arbor

Why Jurisdiction Matters

Jurisdiction determines which agency controls the overall design of the corridor and how the right-of-way is used, determining the modal priority and safety features integrated into the roadway. The design of the right-of-way has implications beyond just how the roads are used; it impacts the character of the corridor and the adjacent land uses. Roadway design influences the types of land use that are appropriate along it and the potential for economic development. Because these roadways traverse the City but are under MDOT jurisdiction, there are implications for the City regarding what can and cannot be done on these roads or within their rights-of-way (ROW). The City of Ann Arbor and MDOT have differing goals for their respective

transportation networks, which lead to different visions for how these roadways should be designed and how they should operate.

The Ann Arbor community has set ambitious goals that are impacted by the design of its transportation network: to eliminate fatalities and serious injuries from crashes by 2025 and to reach a carbon neutral transportation system by 2030. Significant infrastructure changes will need to occur on City roads to sufficiently increase safety and reduce Vehicle Travel Miles Traveled (VMT) enough to meet those goals. With these roadways under state jurisdiction, the City may not be able to implement the changes needed to fully realize its Vision Zero safety and A^2ZERO carbon neutrality programs. Within the downtown area, the DDA relies on a Street Design Manual to guide street designs that support multimodal travel and vibrant streetscapes, but is unable to apply those guidelines to the trunklines.

MDOT's typical approach to road design prioritizes accommodating traffic volume and meeting typical designs like those established by the (Federal Highway Administration) FHWA and Manual and Uniform Traffic Control Devices (MUTCD), without taking advantage of the flexibility in design that those resources offer. These designs are characterized by wide lanes, an emphasis on vehicular throughput, and limited considerations for other modes of transportation. These designs are not always appropriate for city contexts and roadways in this context often require additional considerations and design features to be safer in denser urban environments. As a result, safety, transit access, and non-motorized transportation are placed in competition with maintaining high vehicle speeds and throughput.

Michigan has a legal process known as jurisdictional transfer which transfers ownership of roadways between jurisdictions, including from the state to a city. This process is sometimes referred to as a "Turn Back". There are costs and benefits to Ann Arbor if the City were to assume ownership of the roadways from the state. Advantages include the ability to oversee maintenance of the roadways and carry out improvements or other changes to the roadway without state approval. Challenges include increased responsibility and costs for maintenance and reparation of the roadways.

Transferring trunklines to City jurisdiction would mean that the City acquires additional mileage of roadway to design, operate, and maintain. The City currently receives funding to assist with the maintenance of roadways through Act 51. As part of a jurisdictional transfer process, MDOT would assist the City in ensuring the roadways are up to a state of good repair for the near future, but it would not substantially contribute to the expense of rebuilding these roadways in the long-term. New funding resources will ultimately need to be found to secure the longevity and maintenance of the acquired roadways. The City will be responsible for taking on the future costs of maintenance and procuring funding to meet the new costs taken on by the city.

Study Area

Although there are three distinctly signed state trunkline highways, for the purpose of this study the roadways were divided into segments based on the context of the roadway, major intersections along the roadway, and right-of-way (ROW). Throughout the benefits section of the report, the roadways are referred to by their street name, rather than state trunkline highway designation. The state trunklines that run through the City comprise four signed roads, which were analyzed separately: Jackson Avenue, Huron Street, N Main Street, and Washtenaw Avenue, shown in Figure 2.

The analysis of these roadways includes the distance from downtown up to the city limits, which are approximately bounded by the highways surrounding the City. Portions of the roadways extending beyond the city limits are not considered in this study.

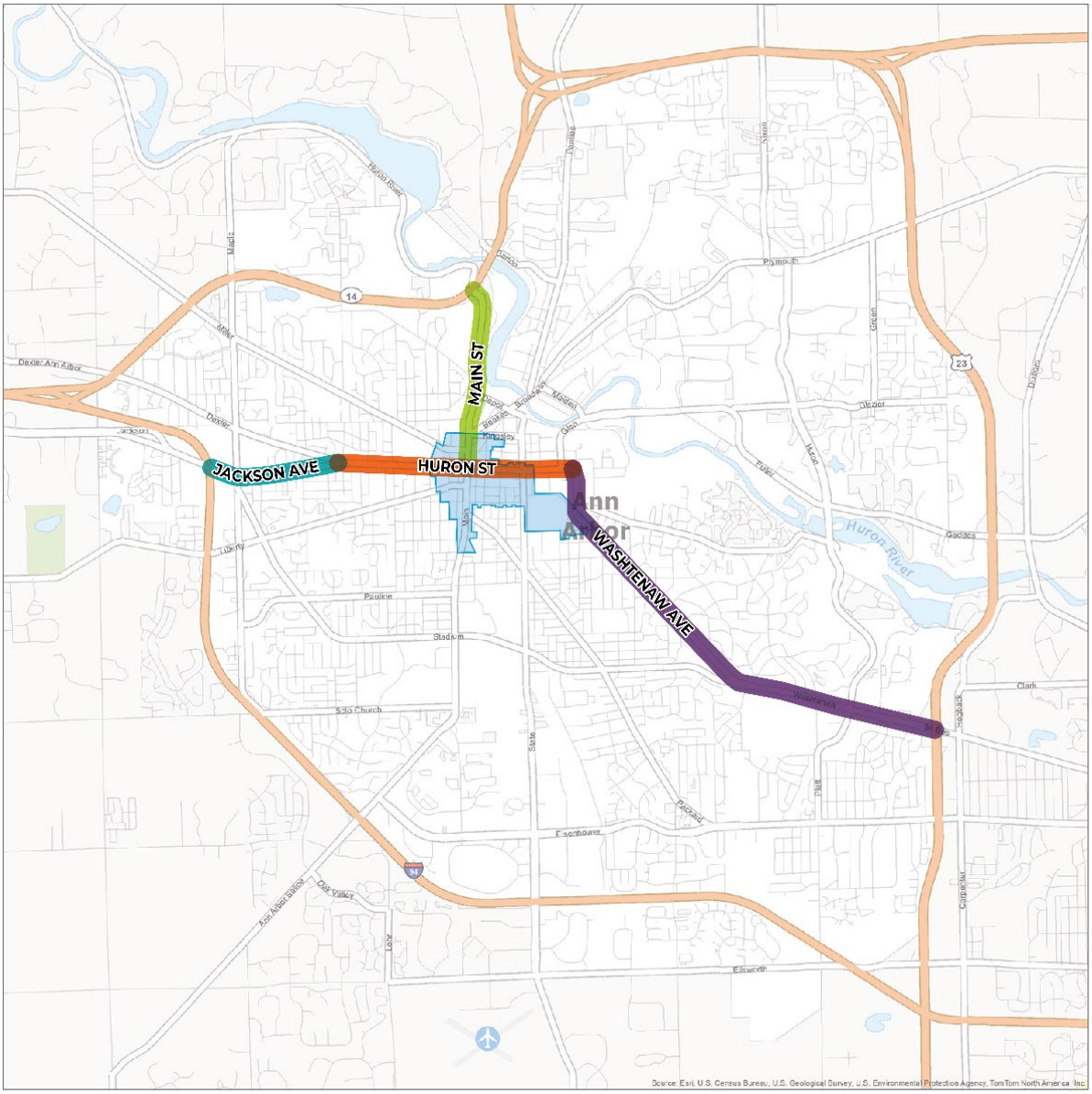

Figure 2: Map of Ann Arbor showing the state trunkline highways running through the city: Jackson Avenue (blue), Huron Street (Green), N Main Street (red), and Washtenaw Avenue (purple)

Policy Review

Two important laws affect what a potential jurisdictional transfer could look like for the City of Ann Arbor. Act 296 of 1969 establishes the jurisdictional transfer process in Michigan, while Act 51 of 1951 establishes funding sources and procedures for roadway maintenance and rehabilitation in the state.

The Michigan State Legislature Act 296 of 1969

The Michigan State Legislature Act 296 of 1969 established that roadway ownership can be transferred between jurisdictions. The conditions of the transfer are that both parties consent and enter into a written agreement that contains the date of transfer, the extents of the roadway to be transferred, and other terms and conditions including payments to be made regarding the transfer. This agreement is made in the form of a Memorandum of Understanding (MOU). Roadway jurisdiction may be transferred between village, county, city, and state governments.[1]

The party wishing to assume or relinquish jurisdiction over roadways approaches the other party to make a transfer request and begin discussing the terms and conditions of the MOU. Act 296 states that the road being transferred must be "relatively free of extraordinary maintenance" for five years following the transfer. For state trunkline to city road transfers, this is achieved one of two ways:

1) MDOT will either finance and complete a rehabilitation project for major repairs to bring the roadway to acceptable standards, or,
2) MDOT will pay the city a lump sum payment instead of a rehabilitation project for the estimated amount required for maintenance of the roadway for some period. This is determined on a cost per mile basis of different sections of the roadway and is included in the MOU.

Right-of-way is not acquired or lost through the transfer. If Ann Arbor proceeds with a jurisdictional transfer, the underlying land would remain under existing ownership. Regardless of ownership of the right-of-way, the authority with jurisdiction of the roadway controls what can and cannot be done. When the roadways are transferred, state route signage is removed.

The Michigan State Legislature Act 51 of 1951

The Michigan Legislature Act 51 of 1951 governs state funding for the majority of Michigan transportation programs. This includes state and local highway programs and all public transportation programs. The Act created the Michigan Transportation Fund (MTF) which finances all state highway projects via gas taxes and vehicle registration fees. Local Road Agencies, including all incorporated cities and villages, receive annual appropriations from the fund. For cities, annual funding is determined by city population and the centerline length in miles of City Local, City Major, and State Trunkline roadways within the city, as well as centerline length of limited access highway touching the city perimeter.

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[1] (TRANSFER OF JURISDICTION OVER HIGHWAYS Act 296 of 1969, 1969)

Act 51 has special funding rules for jurisdictions with state trunkline highways. Despite the fact that major construction and rehabilitation work for those roadways is the responsibility of the state, local jurisdictions with a trunkline running through them or touching its perimeter will receive funding for those trunklines. There also exists a Trunkline Maintenance Reimbursement Program for which the state reimburses the City for routine maintenance of the trunklines. Eligible expenses include signal installations, trunkline signage, sweeping, emergency repairs, pothole repairs, winter maintenance, and shoulder maintenance. Because these funding sources are dependent on the length of state trunkline highways in the city, a jurisdictional transfer from MDOT to the City of Ann Arbor will impact how much funding the City of Ann Arbor will receive annually and may result in the exchange of funds upon the completion of the transfer.[2]

MDOT keeps an official record of roadway miles within each jurisdiction. The record is maintained in the Act 51 Database and Reporting System (ADARS) and is updated annually as new roads are built, change classification, and change jurisdictions. The Act states in Section 1 of section 10a that "Annually the state transportation department shall determine the miles of state trunk line highways, county primary and local roads, and city and village major and local streets transferred to and from state, county, city, or village jurisdiction during the preceding period of July 1 to June 30."

MDOT also publishes Act 51 Mileage Certification Maps annually which show the mileage in each category for every jurisdiction. For each of these roadway types, a city will receive funds based on the total mileage under each roadway category and the total population in the jurisdiction. The unit value per roadway mile and per capita is established annually by MDOT and depends on the total tax collected by the MTF in the previous fiscal year. Table 1 below shows the formula used to estimate annual funding from Act 51.

ACT 51 ESTIMATING FORMAT

	FACTOR	POP. FACTOR		UNIT VALUE		FACTOR TOTAL
MAJOR STREETS:	**POPULATION**		-	**x $ / Person**	=	**$**
	MAJOR MILES	**x**	**PF**	**x $ / Mile**	=	**$**
	TRUNKLINE MILES	**x**	**PF**	**x $ / Mile**	=	**$**
LOCAL STREETS:	**POPULATION**		-	**x $ / Person**	=	**$**
	LOCAL MILES		-	**x $ / Mile**	=	**$**
				TOTAL SHARE RECEIVED FROM MTF	=	**$**

Table 1: Act 51 estimating formula

[2] (MDOT ACT 51 OF 1951)

Funding Before and After a Transfer

Annual Funding from Act 51 Present Day

In 2022, Ann Arbor had 196.78 Local Roadway miles, 101.42 Major Roadway miles, and 36.72 State Trunkline miles. Ann Arbor's population was 123,851 in 2022. Table 2 below shows the estimate for Act 51 funding distributed from the MTF to Ann Arbor in 2022. For Ann Arbor, the population factor is 1.9, per the data shown in Table 3. State trunkline miles are determined by adding the total highway mileage around the perimeter of the City and twice the mileage of state trunklines going through the City.

ACT 51 FUNDING ESTIMATE FOR ANN ARBOR - 2022

	FACTOR	UNITS		POP. FACTOR		UNIT VALUE		FACTOR TOTAL
MAJOR STREETS:	POPULATION	123,851			x	$60.44	=	$7,485,408
	MAJOR MILES	101.42	x	1.9	x	$17,507	=	$3,373,640
	TRUNKLINE MILES	36.72	x	1.9	x	$17,507	=	$1,221,456
LOCAL STREETS:	POPULATION	123,851			x	$20.15	=	$2,495,136
	LOCAL MILES	196.78			x	$4,589	=	$902,996
						TOTAL SHARE RECEIVED FROM MTF	=	$15,478,636

Table 2: Act 51 funding estimate for Ann Arbor in 2022

ACT 51 POPULATION FACTORS FOR CITIES AND VILLAGES

1.0 for population of 2,000 or less.
1.1 for population from 2,001 to 10,000.
1.2 for population from 10,001 to 20,000.
1.3 for population from 20,001 to 30,000.
1.4 for population from 30,001 to 40,000.
1.5 for population from 40,001 to 50,000.
1.6 for population from 50,001 to 65,000.
1.7 for population from 65,001 to 80,000.
1.8 for population from 80,001 to 95,000.
1.9 for population from 95,001 to 160,000.
2.0 for population from 160,001 to 320,000.
Over 320,000, 2.1 plus 0.1 for each 160,000 increment over 320,000.

***NOTE 25,000 and over receive monies for trunkline**

Table 3: Act 51 Population Factors for Cities and Village

Funding from Act 51 After Transfer

Under Act 51, when state trunklines are transferred from the State to a city, they are established as part of the Major Roadway network. Counterintuitively, the amount of annual funding a city receives from the MTF will be the same as before the transfer. The funds are spread out over the additional mileage gained and the amount of money received per mile of city-owned street will decrease after a transfer. While the city would receive the same amount of MTF funding as before, the city would have the additional responsibility of maintaining the transferred roadways.

Upon the completion of a transfer, MDOT will give the receiving jurisdiction a one-time jurisdictional transfer payment. Historically, the jurisdictional transfer payments were made annually. According to an email sent from the Act 51 Reporting contact for MDOT, as of September 2023, MDOT procedures have changed, from annual recurring payments to a one-time payment. This one-time payment amount is based on the "revenue worth" per mile of County Primary roads in the state. Section 3 of section 10a of the Act states that "The total amount of money to be transferred from and to the state trunk line fund, the counties, cities, and villages shall be determined annually by multiplying the current revenue worth per mile of a county primary road and a county local road respectively by the number of accumulated miles in each category transferred from and to state, county, city, or village jurisdiction." The formula to calculate the revenue worth per mile is: (The Total MTF Funds for County Primary Roads from Previous Year) / (Total Statewide County Primary Road Mileage from Previous Year) = (The Current Average Revenue Worth per Mile).

The revenue worth per mile changes over time. The most recent certified revenue worth received from MDOT is currently $31,996.57 per transferred major roadway mile and is the average revenue worth that will be used for analysis in the rest of the report. If transferred, all of Ann Arbor's state trunkline highways will be considered major roadway miles and the City will receive a one-time payment of close to $240,000.

In addition to Act 51 funding, Ann Arbor receives additional monies from MDOT for routine maintenance of its state trunkline highways through a reimbursement process. This amount varies from year to year. The total annual maintenance costs MDOT reimbursed averaged over fiscal years 2019-2023 is equal to $213,187. Dividing by Ann Arbor's 7.5 miles of state trunkline equates to $28,425/mile. In the absence of these reimbursements, the City will have to identify replacement maintenance funds from existing or new funding sources for the transferred segments.

Figure 3 and Figure 4 below show an estimate of the funding the City will receive before and after the transfer assuming the City transfers all segments in 2025. Figure 3 shows the actual Act 51 distributions for 2019, 2020, 2021, and 2022. An estimate based on July 2023 average unit values is used for the 2023 distribution. The actual 2022 distribution is used as an estimate for the 2024, 2025, and 2026 distributions, as it is the most recent distribution. The trunkline maintenance reimbursements include actual values for 2019, 2020, 2021, and 2021, and the average of those four years as an estimate for 2023 and 2025. The one-time jurisdictional transfer payment is the amount calculated in the previous paragraph. There are no state trunkline reimbursements in the year the segments are transferred and every year after.

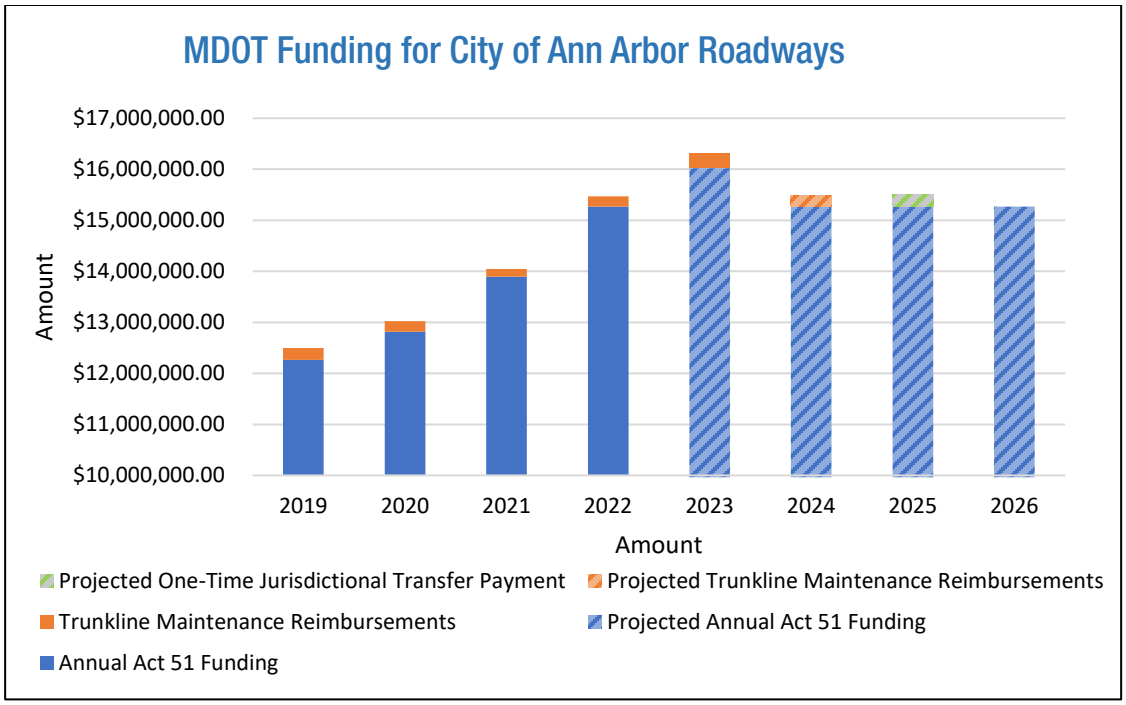

Figure 3: MDOT Funding for City of Ann Arbor Roadways

Figure 3 shows only the values for the trunkline maintenance reimbursements and the one-time jurisdictional transfer payment.

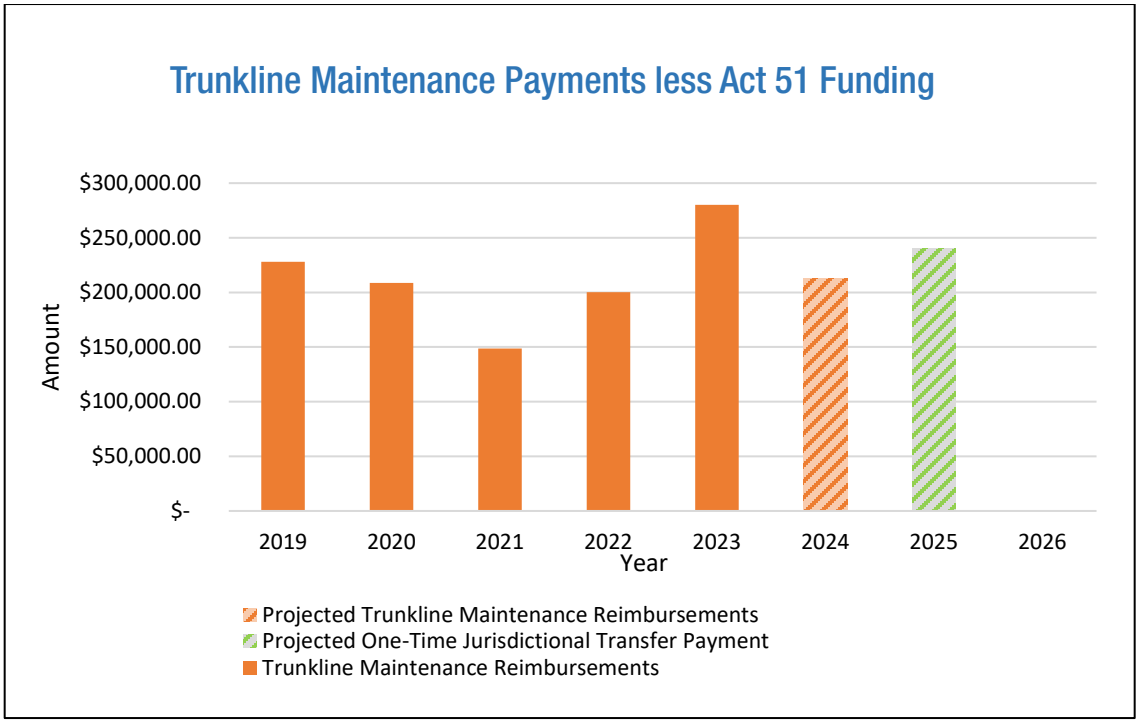

Figure 4: Trunkline Maintenance Payments Less Act 51 Funding

The maintenance reimbursements and jurisdictional transfer payment are small in comparison to the total money received from Act 51, but are funds that will cease once a transfer is complete.

Capital Costs to bring the Trunklines to a State of Good Repair

Act 296 includes a "state of good repair" stipulation for jurisdictional transfers, which requires determining the current state of the roadways and estimating the cost of bringing the roads to a state of good repair for the next five years. Table 4 below summarizes the costs to bring all sections of the Trunklines to a State of good repair and were dependent on the current conditions of the roadway. The anticipated scope of each project is as follows:

N Main Street: Reconstruction (Note: MDOT's capital program includes $21.6 Million in construction costs to reconstruct N Main which will bring it to a state of good repair. The total cost of Ann Arbor performing a similar project in the future is estimated at $30.8 million because the City would take on design, construction, and inspection costs, and include an assumed escalation for inflation.)

Jackson Avenue: Resurface (mill and one course overlay)

Huron Street, 1st to N Main: Resurface (mill and one course overlay)

Huron Street, N Main to Washtenaw: Rehabilitate (mill and multi-course overlay)*

Washtenaw Street: Rehabilitate (mill and multi-course overlay)*

* The recommended treatment for asphalt pavement over concrete in this condition would be a full reconstruction or at least a major rehabilitation that includes rubbilizing the concrete. However, milling the asphalt down to concrete and placing a multicourse overlay is likely to remain in a state of good repair for 5 years as required by Act 296. After a jurisdictional transfer the City will be responsible for the ultimate reconstruction cost sometime in the future.

The total estimated cost to bring N Main, Huron, Jackson, and Washtenaw to a state of good repair is roughly $82M in 2028 dollars. This figure is the amount the City should request from MDOT to bring the state trunklines up to a state of good repair. The costs per lane mile of these segments are total costs that include design, construction, construction inspection and escalation. The cost breakdown per roadway segment is shown in Table 4.

Corridor	Lane Miles	Reconstruct, Resurface, or Rehabilitate	Cost ($/Lane Mile)	Total Cost (incl. escalation, soft costs, CI)
N Main	5.24	Reconstruct	--	$ 30,800,000.00 *
Jackson: I-94 to Huron	3.76	Resurface	$ 600 k	$ 3,478,000.00
Huron: Jackson to 1st	3.00	Resurface	$ 600 k	$ 2,775,000.00
Huron: 1st to N Main	0.65	Resurface	$ 600 k	$ 601,000.00
Huron: N Main Street to Division	1.20	Rehabilitate	$ 1.5 M	$ 2,775,000.00
Huron: Division to Washtenaw	2.12	Rehabilitate	$ 1.5 M	$ 4,903,000.00
Washtenaw: Huron to Stadium	7.84	Rehabilitate	$ 1.5 M	$ 18,132,000.00
Washtenaw: Stadium - US 23	8.05	Rehabilitate	$ 1.5 M	$ 18,618,000.00
				$ 82,083,000.00

*Table 4: Estimated costs to bring trunklines to a state of good repair for five years. *Base cost of $21.6 M per MDOT*

Potential Funding Avenues After a Transfer

Figure 5 shows a summary of the Federal Aid to Highways Program for Michigan FY 2023. The flow chart demonstrates the many fund sources the state receives and the complex method by which they are distributed. While the trunklines taken over by the City of Ann Arbor would be eligible for many of the Federal fund sources in this summary, it is unlikely that the City will receive any additional "formula" funds represented in this summary.

However, in the Bipartisan Infrastructure Law, there are many discretionary programs Ann Arbor can apply for. Information on these programs can be found at the USDOT Discretionary Grants Dashboard. Kalamazoo applied for and received $6,000,000 in federal funding from the discretionary RAISE grant program for a study of their downtown street network, anchored by the trunklines that were transferred to local jurisdiction.

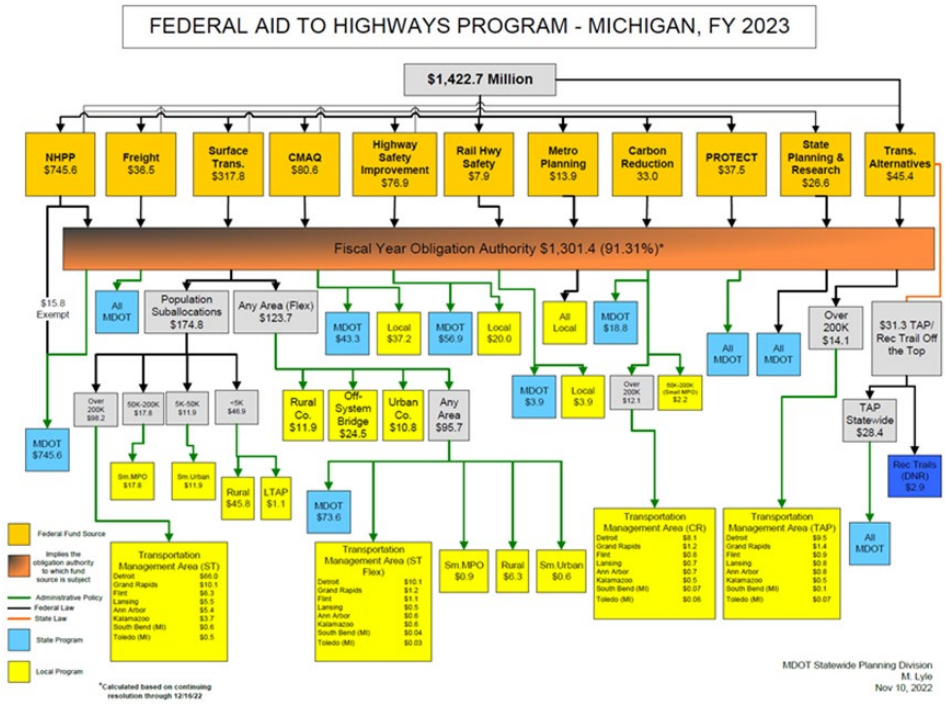

Figure 5: Federal Aid to Highways Program – Michigan, FY 2023

Peer City Interview Findings + Case Studies

After a city has informed MDOT of its intent to pursue a transfer, the city and the state will enter into a series of negotiations to develop a MOU. The MOU is binding and establishes precisely which assets will be transferred, the timeline of the transfer, timeline of transfer payments, and how rehabilitation costs will be shared. Each jurisdictional transfer agreement is different in terms of how rehabilitation costs are shared between MDOT and the city requesting the transfer. The peer city interviews and case studies from Kalamazoo and Grand Rapids show how each city formed an agreement and how costs would be shared to bring the transferred segments into a state of good repair.

Kalamazoo

The MOU between Kalamazoo and MDOT officiated the transfer of state trunkline highways that ran through the city's downtown in 2019. The MOU cites Act 296 of 1969 - Transfer of Jurisdiction of Highways. A memo written by city planners to the city commissioner and mayor declaring that this jurisdictional transfer is needed for Kalamazoo to execute its master plan was an important step in eventually entering into an agreement. Kalamazoo received a lump sum from MDOT upon the roadway transfer. A detailed analysis of how much it would cost to rehabilitate each roadway segment was completed by city and MDOT staff to estimate the value of the lump sum. Another requirement of the transfer agreement stipulated by MDOT was detailed planning and visions for the trunklines. The City of Kalamazoo submitted a 10-year master plan for the trunklines, a retail study, a housing study, community vision for segments it was requesting to own and operate. These terms were established through negotiations with the state.

Through the MOU, MDOT turned back 12.5 miles of state trunkline highway to the city. MDOT agreed to pay the city eleven million six hundred eighty-nine thousand nine hundred ninety-seven dollars ($11,689,997) for a rehabilitation project to keep the roads in a state of good repair for 10 years. Kalamazoo received 60% of the money at the time of the transfer and will receive the rest when 60% of the project is complete, or at six years from the date of the transfer, whichever comes first. Kalamazoo also agreed to assume complete responsibility for maintenance of the roadways. The transfer included all utility, operational, and drainage permits; all bridge, culverts, signs, signal, and other structures or traffic control devices; and all other features existing as part of the roadway. There was a section in the MOU designated for exclusions of the transfer which included three bridges over a river, a creek, and a railroad. The MOU stipulates that if Kalamazoo is unable to complete the rehabilitation project within the 10-year timeframe, all distributed funds are due back to MDOT. The transferred roadways remain in Kalamazoo's jurisdiction regardless of the completion of the rehabilitation project.

Prior to the transfer, Kalamazoo received funds from MDOT to maintain the state trunklines. The increase in funding from Act 51 was less following the transfer than the funding they received for routine maintenance of the roads. Prior to the transfer Kalamazoo did an internal benefit-cost analysis that determined that, in the long run, the jurisdictional transfer will cost the city more money. Despite that, the planning department was able to articulate the benefits to quality of life to the City Council and they proceeded with the transfer.

The City of Kalamazoo expressed satisfaction with their new ownership and described it as being able to decide the quality of life on the streets and making land-use and transportation integration possible. Since the transfer, Kalamazoo has been able to install protected bike

lanes, bike paths, shared used paths and tree lined medians along some of its former trunklines. Overall, Kalamazoo has been able to implement more traffic calming measures, pedestrian signage upgrades, and other safety improvements. Kalamazoo plans to implement road diets, increase non-motorized connectivity, develop streetscapes, and perform some one-way to two-way street conversions.

Grand Rapids

Grand Rapids acquired segments of US-131BR, I-196BS, and some adjacent streets and ramps from MDOT in 2017. These state trunklines run through downtown Grand Rapids, connecting it with nearby freeways. The City of Grand Rapids, Downtown Grand Rapids Inc (DGRI), and MDOT entered a jurisdictional transfer agreement to transfer the roadways and set the terms and conditions of the process. MDOT and Grand Rapids agreed to equally split the cost of rehabilitating the transferred roadways and the adjacent land within the ROW. The City Manager, City Clerk, and the Department of Law all signed the agreement. The transfer allowed Grand Rapids and the DGRI to implement commercial development and connectivity plans along the former business route corridor. After the transfer, all business route signs were removed. MDOT agreed to provide Grand Rapids with $2,413,708 ($340,459 in cash value and $2,073,249 in appraised land value), to bring the roadways to a state of good repair for five years.

A simultaneous agreement made between Grand Rapids, DGRI, and private developer Jackson Entertainment LLC, included provisions to transfer a portion of two downtown parking lots in the public ROW from the state to the city for eventual sale and development of a mixed used facility by Jackson Entertainment LLC. Acquiring and rehabilitating the state trunklines adjacent to these parcels were considered necessary to make the parcels suitable for development. This benefits Grand Rapids because it acquired the lots as part of the payment from MDOT for keeping roadways to a state of good repair and will result in the eventual cash transaction to the city for the sale of the parcels to the developer.

Grand Rapids cited gaining more control over design decisions and regulations as a primary benefit of entering into a jurisdictional transfer agreement with the state. They were also able to accelerate the acquisition of the two lots it has established a desire to develop.

Jurisdictional Transfer Comparison

Table 5 below shows a comparison between the jurisdictional transfers in Kalamazoo and Grand Rapids.

	Kalamazoo	Grand Rapids
Year of Transfer	2019	2017
Assets Transferred	Roadways	Roadways, Parcels for Development
Mileage Transferred	12.5 miles	3.6 miles
State of Good Repair Payment from MDOT	$11,690,000	$2,414,000 ($340,000 in cash value & $2,073,000 in appraised land value)
State of Good Repair Requirement	10 years	5 years
Motivation	Transit, Bicycle, and Pedestrian Safety Improvements, Enhanced Connectivity	Economic Development, Transit, Bicycle, and Pedestrian Safety Improvements, Enhanced Connectivity

Table 5: Comparison between Jurisdictional Transfers in Kalamazoo and Grand Rapids

Corridor Evaluation Process

To evaluate the value of local ownership of these roadways, this study included a Benefit-Cost Analysis (BCA) for each corridor, calculating a dollar value of the benefits that would be anticipated from infrastructure changes the City of Ann Arbor could implement following a jurisdictional transfer, and comparing those benefit values to the costs of those changes. The BCA analysis followed USDOT guidance and is consistent with components of USDOT's discretionary grant programs. Concepts of what future roadway cross sections and amenities could look like were developed and the benefits and costs of one conceptual project along each corridor were calculated. The existing conditions along each corridor were inventoried and evaluated using data collected from site visits, field surveys, MDOT databases, and qualitative data from staff and stakeholders. The study team then identified a long-list of potential benefits that was reviewed and narrowed by City of Ann Arbor staff to create a list of quantifiable benefits applicable to the corridors and in alignment with the City's goals.

Benefit Recipients

A benefit cost analysis assigns monetary values to benefits based on national research and USDOT guidance, however, the majority of the benefits will not lead directly to monetary capture or savings by the City. Many benefits are in the form of improved health, economic development opportunities, cost savings for residents, and increased mobility, which may lead to indirect monetary value to the City and public benefit. A breakdown of quantifiable benefits by category can be found below.

Benefit	Direct Monetary Benefit to the City	Indirect Monetary Benefit to the City	Public Benefit
Safety Benefit		Reduced roadway injury and death will reduce strain on local health systems and emergency response.	Improved safety is a daily public benefit to those using the transportation network.
Emissions Reduction			Emissions reduction and better air quality is a direct benefit to the public.
Noise Reduction Benefit			Noise reduction is a direct benefit to the public.
Facility Amenity Benefit		Improved facilities will lead to higher ridership and more fare revenue for AATA.	Improved facilities will improve the experience of those using the transportation system.
Transit Travel Time Savings		Improved transit travel times will lead to higher ridership and more far revenue for AATA.	Improved transit travel times will improve the reliability and experience of riding transit.
Health Benefits		Improved overall health outcomes will reduce strain on local health systems.	Improved health outcomes are a direct benefit to the public.
Household Cost Savings		Household savings will lead to an indirect benefit of increased spending.	Households will see direct savings from reduced VMT.
Street Maintenance Savings	Maintenance savings for the city annually.		
Property Values		Increased property values will lead to an increase in property taxes.	Private property owners will see a direct benefit of property value lift.
Ecosystem Services			Increased tree cover and green space is a direct benefit to the public.

Table 6: Benefit Recipient Categories

Benefit Methodology

Benefits were calculated for a set of potential improvements that could be made to each of the segments if they were to be transferred to the City. The improvements and the types of quantifiable benefits they provide are summarized in Table 7. While all quantifiable benefits have an associated dollar value, it is important to understand that not all benefits will result in direct monetary benefit to the City. Rather, many of the quantifiable benefits, such as improved safety and noise reduction, represent broad societal benefits to the Ann Arbor community. Further exploration of which benefits will generate direct City revenue can be found in the Benefit Recipients section. In addition to the quantifiable benefits explored in this study, there are qualitative benefits that could be realized under City ownership of the roadways which are described in the Qualitative Insights section of the report.

Benefit Type	*Relevant Improvements*
Safety Benefit	• Lane Reconfiguration • Protected Bike Lanes • Roundabouts • Pedestrian Crossings • Reduced Speed Limit • Leading Pedestrian Interval • Transit Intersection Improvements
Emissions Reduction	• Protected Bike Lanes • Sidewalk Infill • Transit Improvements
Noise Reduction Benefit	• Protected Bike Lanes • Sidewalk Infill • Transit Improvements
Facility Amenity Benefit	• Protected Bike Lanes • Pedestrian Crossings • Reduced Speed Limit • Transit Improvements
Transit Travel Time Savings	• Transit Improvements
Health Benefits	• Protected Bike Lanes • Sidewalk Infill • Transit Improvements
Household Cost Savings	• Protected Bike Lanes • Sidewalk Infill • Transit Improvements
Street Maintenance Savings	• Protected Bike Lanes • Sidewalk Infill • Transit Improvements • Lane Reconfiguration
Property Values	• Transit Improvements
Ecosystem Services	• New Trees

Table 7: Improvements by Benefit Category

The process for calculating benefits can be broken down into two groups of steps for each potential corridor improvement: intermediate steps and benefits calculations. Figure 6 provides a diagram of the process for calculating each benefit, with purple boxes representing intermediate steps and green boxes representing the final benefit calculation. As shown in the overview, some benefits calculations require one or more intermediate steps, while others can be calculated more directly.

A summary of the methodology for each step is described below, while detailed methodologies and example calculations are provided in Appendix B.

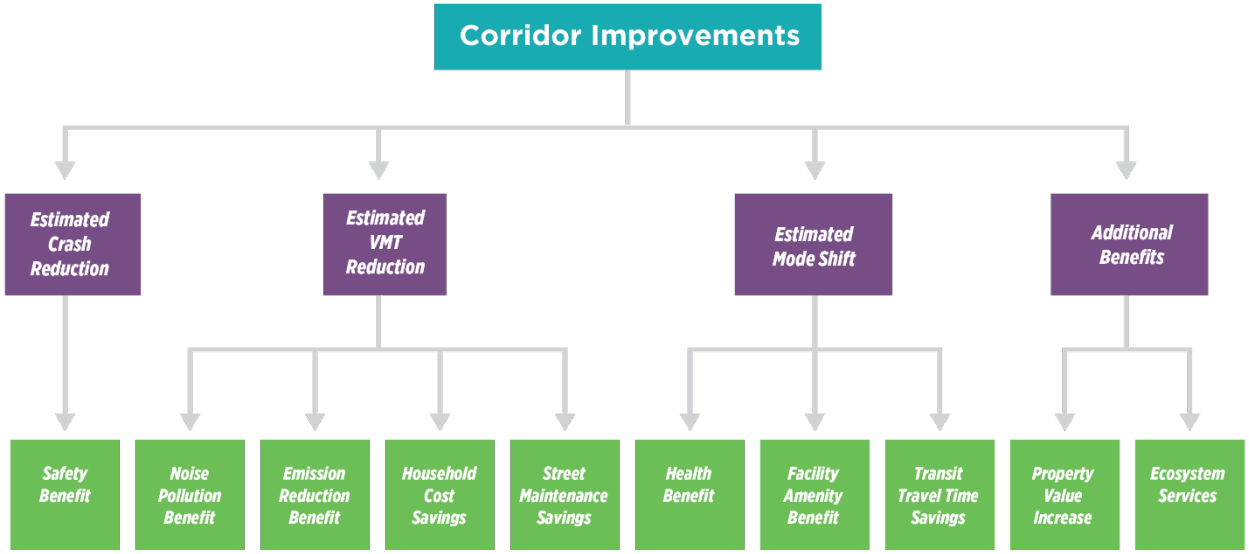

Figure 6: Benefits Methodology Overview

Intermediate Steps

Estimated Crash Reduction

Each improvement to a segment has the potential to yield a quantifiable reduction in crashes. To determine the extent of this reduction for the entire segment, the following steps must be taken:

1. Determine the correct Crash Modification Factor (CMF) associated with each specific improvement. CMF values are factors derived from traffic safety research used to estimate the expected number of crashes after installing an improvement. CMF values are specific to types of crashes depending on their severity and frequency. In cases where improvements have multiple potential CMF values, the highest rated CMF value that best matches the context of the improvement location is selected.
2. Group improvements that have the same area of impact. For example, improvements at the same intersection (LPI, crosswalks, curb extensions) or improvements that affect the entire segment (speed limit reduction, lane reconfiguration).
3. Combine CMF values specific to the same crash severity and type of crash at each area of impact. For example, all CMF values for injury-causing pedestrian crashes at the same intersection should be combined.
4. Repeat this for all improvements and organize the combined CMF value tables for all areas of impact for each segment.

A table of CMF values for each type of crash at each area of impact was developed to calculate the safety benefit based on the specific conditions.

Estimated Vehicle Miles Traveled (VMT) Reduction and Mode Shift

Any improvement to the segment that leads to a reduction in VMT and mode shift to walking, biking, or transit can produce quantifiable benefits. This includes improvements like sidewalk infill, improved bicycle facilities, or improved transit facilities or service. Estimating the total number of trips shifted and VMT reduced must be done first because it is a key input for many of the benefits calculations. Because mode shift (i.e., shifting a trip from private automobile to walk/bike/transit) and VMT reduction are directly related, either one can be calculated from the other. Therefore, two methods were used to estimate mode shift *and* VMT reduction for different types of improvements:

Method 1: Calculate the expected mode shift from the specific improvement; use mode shift to estimate VMT reduction.

Method 2: Calculate the expected VMT reduction from the specific improvement; use VMT reduction to estimate mode shift.

Estimated Transit Travel Time Change

Improvements that result in reduced travel time can also yield benefits. For the scope of this BCA, only transit travel time savings were considered. Private vehicle travel time savings most often requires traffic modeling, which is outside the scope of this analysis and therefore excluded. Walking and biking travel time savings is usually realized through the creation of a new route or shortcut that leads to time savings, rather than simply upgrading an existing route. Benefits from improved walking and biking facilities can be found in the facility amenity benefit, however time savings were excluded.

To calculate the estimated change in transit travel time, travel time reduction factors from USDOT were applied to baseline travel times along each segment to get estimated time savings per ride. To get the total annual rider-hours saved on each route, the estimated time savings per ride was extrapolated using route-specific ridership data, as well as expected ridership gains from transit service improvements. This number is a key input for the transit travel time savings benefit outlined in the Benefits Calculations section.

Benefits Calculations

Safety Benefit

To calculate the safety benefit, CMFs must first be determined for each area of impact. This process is outlined in the Estimated Crash Reduction section. After this, the following steps are taken to assess the monetized benefit of the expected crash reduction:

1. For each area of impact, the last five years of crash data are used to determine baseline annual crash injuries using SEMCOG crash data[3], separated by mode (motor vehicle, pedestrian, and cyclist) and severity of injury (fatal, A-injury, B-injury, C-injury, and property damage). Crashes that fall within 75' of improvements, either intersection points or street centerlines, are included in the baseline.
2. Apply the CMF values to each area of impact's baseline annual crash injuries by their respective mode and injury severity. This yields the expected annual *reduction* in injuries for each area of impact. For example, if an intersection saw 1 B-injury per year and CMF values indicate an expected 17% in B-injury crashes, there would be an *0.17 expected reduction* in B-injuries annually.
3. For each area of impact, the expected reduction in injuries is monetized based on USDOT values found in Table 8. All values are summed to find the annual benefit for each area of impact.

Crash Type Monetized Value (2021 $)	
Injury Crash	$ 307,800
C – Possible Injury	$ 78,500
B – Non-incapacitating	$ 153,700
A – Incapacitating	$ 564,300
K – Killed	$ 11,800,000
U – Injured (Severity Unknown)	$ 213,900
# Accidents Reported (Unknown if Injured)	$ 162,600
PDO Crash	$ 4,800

Table 8: USDOT Crash Type Monetized Value

4. The annual benefit for each area of impact is then combined with all areas of impact on the segment to yield the total safety benefit for the segment.

[3] SEMCOG Crash Location Data (2018-2022)

Emission Reduction Benefit

Emission reduction benefits are calculated from the reduced air pollution from people shifting motor vehicle trips to walking, cycling, or taking transit. These benefits are a direct function of the estimated VMT reduction from improvements on a segment, outlined in the Estimated Vehicle Miles Traveled (VMT) Reduction and Mode Shift section.

For each segment, the expected annual VMT reduction is used to estimate an annual reduction in common air pollutants (Nox, PM2.5, and CO2), using factors from the Bureau of Transportation Statistics[4] and the Environmental Protection Agency[5]. After estimating the annual reduction of these emissions, the annual monetized value of reducing each emission type is found using USDOT emissions values tables. Summing the total value of reduced emissions for each year yields the annual emissions reduction benefit.

Noise Reduction Benefit

The annual monetized Noise Reduction Benefit can be calculated directly from the total estimated reduction in VMT for each segment. Per USDOT guidance, $0.0018 for every reduced vehicle mile travel is applied to yield the annual Noise Reduction Benefit.

Facility Amenity Benefit

The Facility Amenity Benefit monetizes the user experience for improvements made to pedestrian, cycling, and transit facilities. While specific calculations vary for each type of facility improvement, the methodology typically follows this pattern:

1. Identify improvement with an associated facility amenity benefit.
2. Estimate how many people will use the facility after installation using existing counts and any expected increases in use. This could include pedestrian counts, cycling counts or transit ridership data.
3. Monetize the benefit of the new facility per USDOT guidance.

Summing all facility improvements on a segment gives the annual facility amenity benefit for that segment.

Transit Travel Time Savings

For segments with improvements to transit infrastructure, estimated transit travel time savings are monetized for every minute each rider saves along the route. This value is a direct function of annual rider-hours saved found in the Estimated Transit Travel Time Change section. For each bus route, the USDOT value for all purpose travel time ($18.80/hour) is applied to the annual rider-hours saved to get the routes travel time savings. If a segment contains more than one route, travel time savings for all routes are summed for the total travel time savings.

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[4] Estimated U.S. Average Vehicle Emissions Rates per Vehicle by Vehicle Type Using Gasoline and Diesel

[5] Greenhouse Gas Emissions from a Typical Passenger Vehicle

Health Benefit

Heath Benefits can be calculated for any improvement expected to increase the annual cycling and pedestrian trips for that segment. The number of new annual trips is calculated directly from the estimated VMT reduction and mode shift described above. The benefit is calculated by multiplying the number of new cycling and pedestrian trips by the reduced mortality benefit rate.[6]

Household Cost Savings Benefit

The annual monetized Household Cost Savings can be calculated directly from the total estimated reduction in VMT for each segment. Per USDOT guidance, each reduced vehicle mile travel equates to $0.46 in transportation cost savings for households.[7] Multiplying the estimated annual VMT reduction by $0.46 yields the annual Household Cost Savings for each segment.

Street Maintenance Savings (Facility Amenities Benefit)

Street Maintenance Savings were found in two different ways depending on the recommended segment improvements in each corridor scenario.

The first is a reduction in vehicle lanes. Proposed reductions to vehicle lanes were assumed to reduce the annual maintenance obligations proportionately. For example, changing N Main Street from four vehicle lanes to three vehicle lanes would result in an expected 25% savings in annual maintenance. Annual maintenance for new bike lanes is captured on the costs side. For relevant segments, the baseline annual maintenance cost is found using data from Ann Arbor[8] and the expected reduction is applied to yield the expected annual Street Maintenance Savings.

The second way is through a reduction in VMT. Any expected reduction in VMT can also be used to estimate Street Maintenance Savings. To estimate this, a rate of $0.0017 in annual reduced maintenance is multiplied by VMT reduction calculate as part of the improvement.[9] Applying this to the expected VMT reduction found previously yields the expected Street Maintenance Savings from VMT reduction.

If a segment has both a reduction in vehicle lanes and an expected reduction in VMT, the benefits are combined for the total annual Street Maintenance Savings.

Property Values

The Property Values benefit captures the expected increase to residential property values after improving nearby transit service. This benefit is calculated using research from a 2022 study

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[6] USDOT Benefit-Cost Analysis Guidance (2023)

[7] USDOT Benefit-Cost Analysis Guidance (2023)

[8] City of Ann Arbor Average Trunkline Maintenance (2019-2022)

[9] Source: USDOT pavement $/VMT estimate inflated to 2021 dollars (https://www.matatransit.com/assets/2/6/BCA_Report.pdf)

assessing the impact of bus rapid transit on residential property values.[10] This study shows an average increase of 0.11% to residential properties within 800 meters of bus stops with improvement to bus rapid transit service.

To calculate this benefit, the baseline total property value within 800 meters of bus stops were found for each segment, and the expected increase in property value of 0.11% was applied to find the private residential land value increase. The increase in land value will remain as a one-time benefit and is plugged into the benefit-cost analysis for only the year of project completion.

In addition to land value, the increase in taxable value and property millage rates are used to calculate the annual increase in property taxes. This is plugged into the benefit-cost analysis as a recurring annual benefit.

Ecosystem Services

Ecosystem Services quantifies the benefit of being able to plant additional trees along trunklines after the City takes ownership of the street. For each segment, the existing density of trees along the segment is compared to a set of control streets with similar characteristics. If the segment has fewer trees/mile than the control, the assumption is that enough trees will be planted to match the density of the control streets. The number of expected new trees for the segment is plugged into the Benefits of Complete Streets Tool, a tool from Smart Growth America that quantifies the external benefits of planting new trees.[11] The output from this tool is used to quantify the Ecosystem Services benefit.

Discounting Annual Benefits

The final step in assessing benefits for each segment is to discount annual benefits to 2021 dollars at a discount rate of 7% (3% for all CO2 benefits). To do this, total annual benefits are summed for each year and discounted to 2021 dollars using this formula: *Discounted Annual Benefit = Annual Benefit / (1+Discount Rate)^(Years Since 2021).* Discounted annual benefits are then summed across the life span of the project for the total discounted benefit.

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[10] Blake Acton, Huyen T.K. Le, Harvey J. Miller, Impacts of bus rapid transit (BRT) on residential property values: A comparative analysis of 11 US BRT systems, Journal of Transport Geography, Volume 100, 2022.

[11] Smart Growth America | Benefits of Complete Streets Tool (2020)

Benefit-Cost Analysis Summary

Due to the different types of improvements and existing conditions of each segment analyzed in the benefit-cost analysis, every benefit was not quantifiable for all sections. Table 9 outlines which quantifiable benefits were included in each segment's BCA (green indicates included benefits; red indicates excluded benefits).

	N Main Street (M14 – Huron)	Jackson St (I-94 – Huron)	Huron St (1st – Washtenaw)	Huron St (Jackson – 1st)	Washtenaw Ave (Huron – Stadium)	Washtenaw Ave (Stadium – US23)
Safety Benefit						
Emissions Reduction						
Noise Reduction Benefit						
Facility Amenity Benefit						
Transit Travel Time Savings						
Health Benefits						
Household Cost Savings						
Street Maintenance Savings						
Property Values						
Ecosystem Services						

Table 9: Included Quantified Benefits by Segment

Corridor Benefit Cost Analysis

Understanding the existing conditions of the trunklines is necessary to quantify the benefits and costs of bringing the roads to a state of good repair and developing potential corridor improvement scenarios. For some scenarios, the state trunklines have been broken into subsegments based on changes in the roadway context and configuration along the trunkline.

Capital Costs and Maintenance Estimates

For the purposes of each segment's BCA, capital cost estimates for the improvements were inflated to 2028 dollars, and then discounted at a rate of 7%, per USDOT BCA guidance. In addition to improvement costs, the analysis assumed an annual operations and maintenance cost based on the average MDOT reimbursement amount for the trunklines from 2019-2022. For capital maintenance costs, it was assumed that each segment would receive a single-course overlay every seven years once the road is brought up to a state of good repair.

N Main Street (M-14 – Huron Street)

N Main Street runs 1.3 miles in a north south direction. It links downtown Ann Arbor with M-14 to the north. The entirety of N Main Street is analyzed as a single segment.

Existing Cross Section

The existing typical cross section for N Main Street is shown below in Figure 7, along with additional existing conditions details in Table 10. The focus intersections along this corridor are Catherine Street/Miller Avenue, Kingsley Street, and Summit Street. These intersections were identified as priority locations for safety improvements through both the Ann Arbor Comprehensive Transportation Plan and conversations with city staff.

N Main Street (M-14 – Huron Street)	
ROW	66'-82.5'
AADT	10,000-24,700
Speed limit	45 mph; 30 mph downtown

Table 10: N Main St Existing Conditions

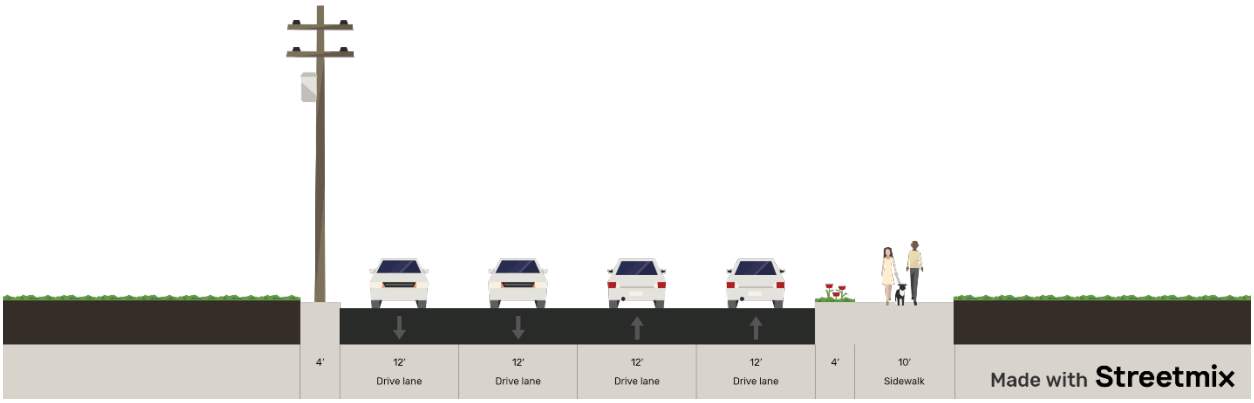

Figure 7: N Main Street Typical Cross Section

Potential Future Concept

The potential future concept for N Main Street is shown below in Figure 8, showing corridor-long improvements of lane reconfiguration, sidewalk infill, and a two-way protected bike lane. Additionally, the following improvements are included in a potential future corridor reconstruction:

- Roundabouts at Huron River Drive and Huronview Boulevard
- Pedestrian crossing and pedestrian refuge island (PRI) at Lakeshore Drive
- Leading pedestrian intervals (LPI) at all signalized intersections
- Bumpouts at Kingsley Street and Catherine Street/Miller Avenue
- Dedicated bike signals at Summit Street

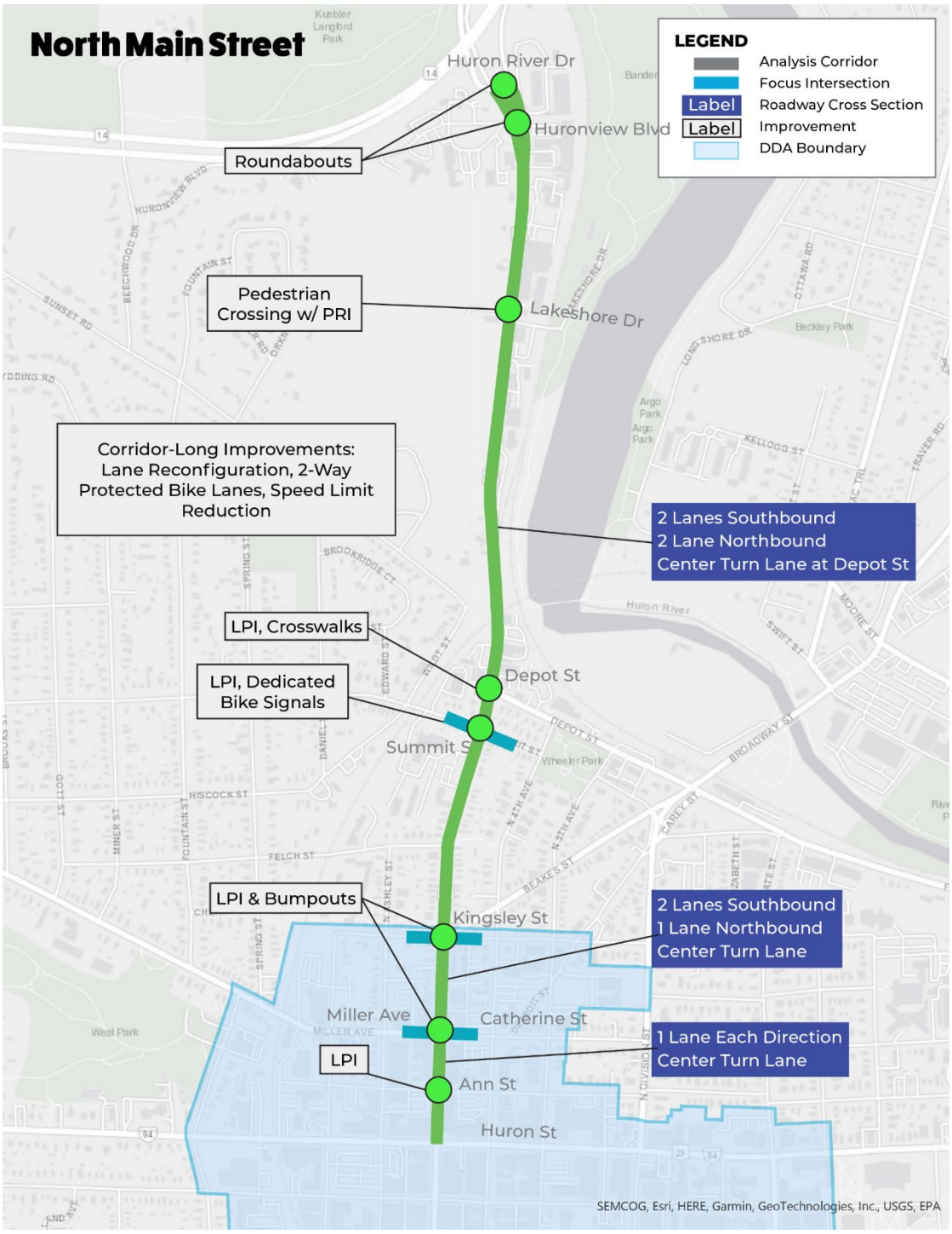

Figure 8: North Main Street Potential Future Set of Improvements

Benefit-Cost Analysis

Benefits for N Main Street total an estimated $19.8 million over a 20-year project life cycle. The breakdown of resulting benefits by category can be found below in Table 11.

Benefit Category	Total Discounted Benefits	Share of Total Quantified Benefits
Safety Benefit	$ 16,511,000	83.3%
Emissions Reduction (NOx, PM2.5, CO2)	$ 18,000	0.1%
Noise Reduction Benefit	$ 1,000	0.0%
Facility Amenity Benefit	$ 990,000	5.0%
Transit Travel Time Savings	$ -	0.0%
Health Benefits	$ 1,909,000	9.6%
Household Cost Savings	$ 141,000	0.7%
Street Maintenance Savings	$ 54,000	0.3%
Property Values	$ -	0.0%
Ecosystem Services	$ 207,000	1.0%
Total	$ 19,830,000	100.0%

Table 11: N Main Street Future Concept Benefits

For this segment, over 80% of quantifiable benefits come from safety improvements alone. Nearly 70% of safety benefits are realized through lane reconfiguration and speed limit reduction. In total, the safety benefits of lane reconfiguration and speed limit reduction account for over 57% of all segment benefits. The relative magnitude of safety benefits for each improvement is shown in Table 12.

Safety Benefit by Improvement	Share of Safety Benefits
Lane Reconfiguration with Protected Bike Lanes, Speed Limit Reduction	69%
Roundabout at Huron River Dr	5%
Roundabout at Huronview Blvd	3%
Pedestrian Crossing with PRI at Lakeshore Dr	4%
Leading Pedestrian Interval at Ann St	2%
Intersection Improvements at Catherine St/Miller Ave	4%
Intersection Improvements at Kingsley St	4%
Intersection Improvements at Summit St	4%
Intersection Improvements at Depot St	6%
Sidewalk Infill North of 950 N Main St	0%

Table 12: N Main Street Safety Benefits Breakout

Capital costs for the proposed segment improvements are shown in Table 13. Note that this table outlines non-discounted capital costs and does not include ongoing maintenance costs. The roadway improvements for N Main Street are assumed to be full roadway reconstruction from M-14 to Huron Street. The cost per lane mile for reconstruction is based on average costs per lane mile for similar projects included in the MDOT 2023-2026 TIP program. Other unit costs were developed through coordination with the City based on recently completed projects and the MDOT 2023 Weighted Average Bid Price Report with 3% average escalation to a 2028 construction start.

			UNIT COST		TOTAL COST	
	Units	**Quantity**	**Low**	**High**	**Low**	**High**
Reconstruction	Lane Miles	5.24	$2,400,000	$3,000,000	$12,576,000	$15,720,000
Roundabout	# of Intersections	2	$1,500,000	$2,000,000	$3,000,000	$4,000,000
Reduced Speed Limit	# of Signs	6	$100	$250	$600	$1,500
Added Crosswalk w/pedestrian Refuge Island	# of Islands	1	$24,000	$30,000	$24,000	$30,000
LPI	# of Signals	14	$4,000	$20,000	$56,000	$280,000
- Bump outs	# of Bump Outs	3	$20,000	$25,000	$60,000	$75,000
- Dedicated Bike Signals	Each	4	$4,800	$15,000	$19,200	$60,000
Subtotal					$15,735,800	$20,166,500
Escalation					$18,242,105	$23,378,501
Design Contingency 10%					$1,824,211	$2,337,850
Soft Costs - Design Team 15%					$2,736,316	$3,506,775
CM/REI Fee 8%					$1,459,368	$1,870,280
Grand Total					**$24,262,000**	**$31,093,000**

Table 13: North Main Street Detailed Capital Cost Estimate

The breakdown of total estimated benefits and costs can be found below in Table 14. The total net costs show both a low estimate and a high estimate and are inclusive of ongoing maintenance to the roadway. Following each cost estimate is a benefit-cost ratio (BCR) to quantify the benefits of improvements relative to costs. For N Main Street, the benefits and costs are nearly equal, with a BCR of 0.98, when using the low-cost estimate; however, the BCR drops to 0.78 when using the high-cost estimate. Note that cost estimates are discounted at 7%, per USDOT guidance.

Project Costs and Benefits Over 20 Years		
Capital Costs and Ongoing Maintenance		
	Total Cost - Low Estimate	Total Cost - High Estimate
Total Capital Cost Estimate	$24,262,000	$31,093,000
Total Capital Maintenance Estimate	$10,635,000	$13,294,000
Total O&M Estimate	$1,301,000	$1,301,000
Net Cost Estimate *(Undiscounted)*	$36,199,000	$45,689,000
Net Cost Estimate ***(7% Discount)***	**$20,136,000**	**$25,562,000**
Benefits		
Net Benefits	**$19,830,000**	
Benefit-Cost Ratio	**0.98**	**0.78**

Table 14: North Main Street Benefit-Cost Summary

After assessing benefits for this segment, an additional analysis was conducted to generate a range of benefits by modifying a core assumption. For N Main St, the assumption of a 128% increase in cycling trips after adding a protected bike lane to a segment with no existing bike facility was the key driver of the expected VMT reduction. This assumption was pulled from the California Air Resources Board[12], and represents the average increase in cycling trips found in the study. To generate a range of benefits, the lowest (21%) and highest (500%) increase in cycling trips found in the report were both used to produce a high-end and low-end benefit estimate. Changing this assumption directly impacted six of the eight benefits: Emissions Reduction, Noise Reduction, Facility Amenity, Health Benefits, Household Cost Savings and Street Maintenance Savings. Table 15 shows the impact to segment benefits when using each assumption, revealing that the total benefits could decrease by 2% or increase by 8% if this assumption was changed.

	Low Estimate (21% Bike Ridership Increase)	Mid Estimate (128% Bike Ridership Increase)	High Estimate (500% Bike Ridership Increase)
Benefit Category	**Total Discounted Benefits**	**Total Discounted Benefits**	**Total Discounted Benefits**
Safety Benefit	$16,511,000	$16,511,000	$16,511,000
Emissions Reduction (NOx, PM2.5, CO2)	$15,000	$18,000	$30,000
Noise Reduction Benefit	$500	$600	$900
Facility Amenity Benefit	$835,000	$990,000	$1,528,000
Transit Travel Time Savings	$0	$0	$0
Health Benefits	$1,617,000	$1,909,000	$2,923,000
Household Cost Savings	$115,000	$141,000	$234,000
Street Maintenance Savings	$54,000	$54,000	$54,000
Property Values	$0	$0	$0
Ecosystem Services	$207,000	$207,000	$207,000
Total	**$19,354,000**	**$19,830,000**	**$21,488,000**
% Change	**-2%**	**-**	**+8%**

Table 15: N Main Street Benefits Range

[12] CARB: Quantifying Reductions in Vehicle Miles Traveled from New Bike Paths, Lanes, and Cycle Tracks, 2019.

Jackson Avenue (I-94 – Huron Street)

Jackson Avenue runs for 1.0 mile in an east-west direction. It links the west side of Ann Arbor and I-94 to the downtown. The entirety of Jackson Avenue is analyzed as a single segment.

Existing Cross Section

The existing typical cross section for Jackson Avenue from I-94 to Huron Street is shown below in Figure 9, along with additional existing conditions details in Table 16.

JACKSON (I-94 – HURON)	
ROW	99’
AADT	14,000
Speed limit	35 mph

Table 16: Jackson Ave Existing Conditions

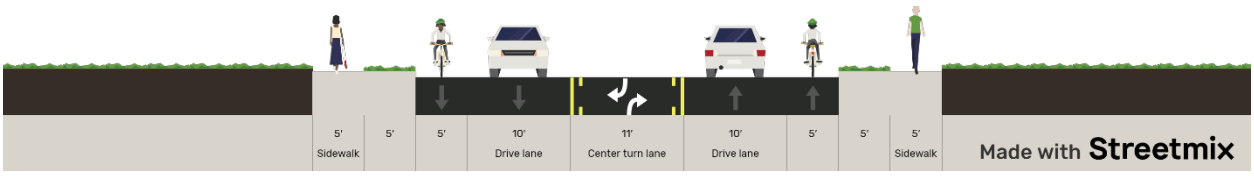

Figure 9: Jackson Avenue Typical Cross Section (I-94 to Huron Street)

Potential Future Concept

The potential future concept cross section for Jackson Avenue from I-94 to Huron Street is shown below in Figure 10. There are no corridor long changes in the potential future concept, however minor intersection-level improvements are included which are shown below:

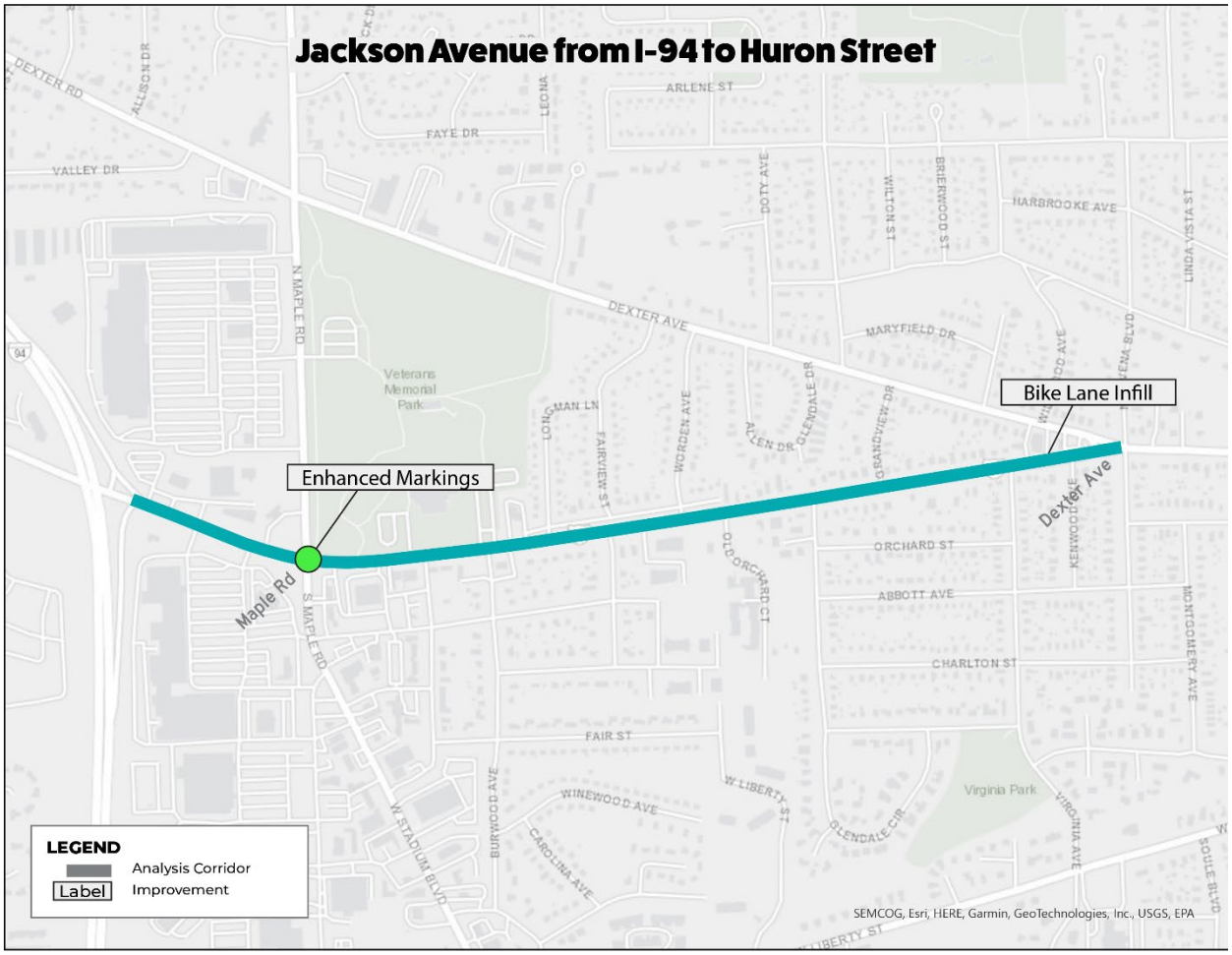

Figure 10: Jackson Avenue Potential Future Set of Improvements

Benefit-Cost Analysis

Benefits for Jackson Avenue from I-94 to Huron Street total an estimated $78,000 over a 20-year project life cycle. The breakdown of resulting benefits by category can be found below in Table 17.

Benefit Category	Total Discounted Benefits	Share of Total Quantified Benefits
Safety Benefit	$ 47,000	60.7%
Emissions Reduction (NOx, PM2.5, CO2)	$ -	0.0%
Noise Reduction Benefit	$ -	0.0%
Facility Amenity Benefit	$ 31,000	39.3%
Transit Travel Time Savings	$ -	0.0%
Health Benefits	$ -	0.0%
Household Cost Savings	$ -	0.0%
Street Maintenance Savings	$ -	0.0%
Property Values	$ -	0.0%
Ecosystem Services	$ -	0.0%
Total	$ 78,000	100.0%

Table 17: Jackson (I-94 – Huron) Future Concept Benefits

Capital costs for the proposed segment improvements are shown in Table 18. Note that this table outlines non-discounted capital costs and does not include ongoing maintenance costs. The roadway improvements for Jackson Avenue are assumed to be milling and one course asphalt overlay from I-94 to Huron Street. The cost per lane mile for milling and one course overlay is based on average costs per lane mile for similar projects included in the MDOT 2023-2026 TIP program with a 35% Ann Arbor City factor added to account for work performed within city limits. Other unit costs were developed through coordination with the City based on recently completed projects and the MDOT 2023 Weighted Average Bid Price Report with 3% average escalation to a 2028 construction start.

			UNIT COST		TOTAL COST	
	Units	**Quantity**	**Low**	**High**	**Low**	**High**
Mill & Resurface	Lane Miles	3.76	$480,000	$600,000	$1,804,800	$2,256,000
Green Painted Bike Lane	LF	250	$10.00	$20	$2,500	$5,000
Subtotal					$1,807,300	$2,261,000
Escalation					$2,095,156	$2,621,119
Design Contingency 10%					$209,516	$262,112
Soft Costs - Design Team 15%					$314,273	$393,168
CM/REI Fee 8%					$167,612	$209,689
Grand Total					**$2,787,000**	**$3,486,000**

Table 18: Jackson (I-94 – Huron) Detailed Capital Cost Estimate

The breakdown of total estimated benefits and costs can be found below in Table 19. The total net costs show both a low estimate and a high estimate and are inclusive of ongoing maintenance to the roadway. For both low and high-cost estimates, the BCR falls below 1. However, this is not surprising because this segment was recently reconstructed and upgraded with several safety countermeasures, and few improvements are proposed in the potential future concept.

Project Costs and Benefits Over 20 Years		
Capital Costs and Ongoing Maintenance		
	Total Cost - High Estimate	Total Cost - Low Estimate
Total Capital Cost Estimate	$2,787,000	$3,486,000
Total Capital Maintenance Estimate	$7,631,000	$9,539,000
Total O&M Estimate	$749,000	$749,000
Net Cost Estimate *(Undiscounted)*	$11,167,000	$13,774,000
Net Cost Estimate *(7% Discount)*	**$4,638,000**	**$5,731,000**
Benefits		
Net Benefits	**$78,000**	
Benefit-Cost Ratio	**0.02**	**0.01**

Table 19: Jackson (I-94 – Huron) Benefit-Cost Summary

Huron Street

Huron Street runs 1.5 miles in an east west direction. It runs through downtown Ann Arbor and the University of Michigan central campus. Huron Street is divided into two segments for analysis – Jackson Avenue to 1st Street and 1st Street to Washtenaw Avenue.

Huron Street (Jackson Avenue – 1st Street) Existing Cross Section

The existing typical cross section for Huron Street from Jackson Avenue to 1st Street is shown below in Figure 11, along with additional existing conditions details in Table 20. One focus intersection along this section is at 1st Street, identified as a priority location for safety improvements in the Ann Arbor Comprehensive Transportation Plan.

HURON (JACKSON – 1ST)	
ROW	66’
AADT	14,000
Speed limit	35 mph

Table 20: Huron Street Existing Conditions (Jackson Avenue to 1st Street)

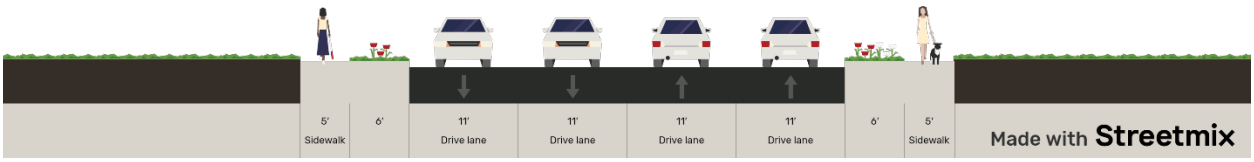

Figure 11: Huron Street Typical Cross Section (Jackson Avenue to 1st Street)

Huron Street (Jackson Avenue – 1st Street) Potential Future Concept

The potential concept for Huron Street from Jackson Avenue to 1st Street can be found below in Figure 12, showing the potential section improvement of dedicated bus lanes. Additionally, pedestrian crossings near 704 W Huron Street and Arbana Street, leading pedestrian intervals at two signalized intersections, and a reduced speed limit (30 mph) are also included in a potential future set of improvements:

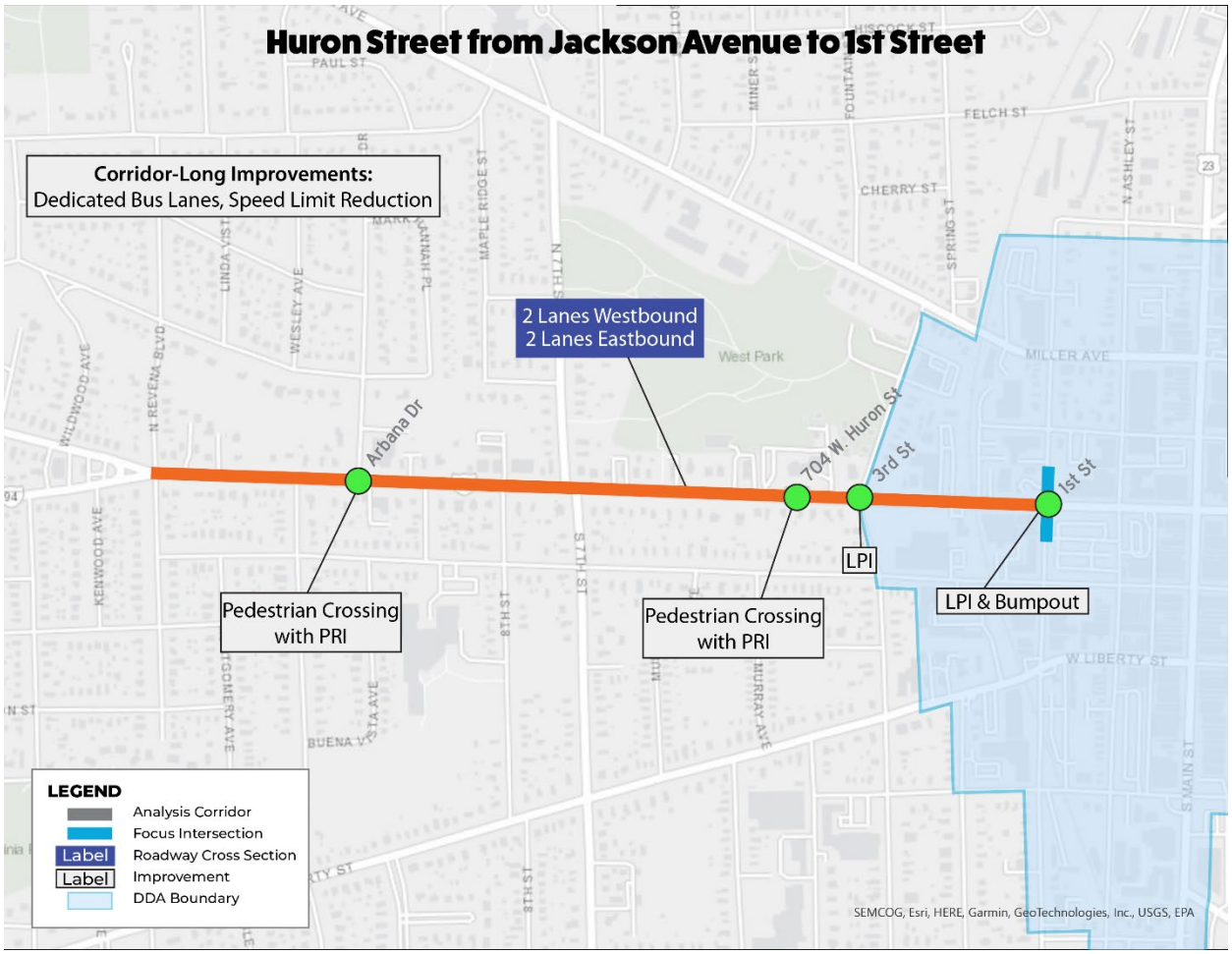

Figure 12: Huron Street Potential Future Set of Improvements (Jackson Avenue to 1st Street)

Benefit-Cost Analysis

Benefits for Huron Street from Jackson Avenue to 1st Street total an estimated $7.5 million over a 20-year project life cycle. The resulting benefits can be found below in Table 21.

Benefit Category	Total Discounted Benefits	Share of Total Quantified Benefits
Safety Benefit	$ 4,430,640	59.0%
Emissions Reduction (NOx, PM2.5, CO2)	$ 31,425	0.4%
Noise Reduction Benefit	$ 961	0.0%
Facility Amenity Benefit	$ 627,269	8.4%
Transit Travel Time Savings	$ 1,176,121	15.7%
Health Benefits	$ 524,182	7.0%
Household Cost Savings	$ 245,491	3.3%
Street Maintenance Savings	$ 907	0.0%
Property Values	$ 468,000	6.2%
Ecosystem Services	$ -	0.0%
Total	$ 7,504,996	100.0%

Table 21: Huron (Jackson – 1st) Future Concept Benefits

For this segment, over 80% of quantifiable benefits come from safety improvements, transit travel time savings and health benefits, with 59% of total quantifiable benefits coming from safety alone. Since over half of the segment's benefits are from safety, the relative magnitude of safety benefits for each improvement is broken out in Table 22.

Safety Benefit by Improvement	Share of Safety Benefits
Speed Limit Reduction	25%
LPI & Curb Extension at 1st St	24%
LPI at 3rd St	13%
Pedestrian Crossing with PRI at 704 W Huron St	0%
Pedestrian Crossing with PRI at Arbana St	4%
Corridor-Long Transit Intersection Improvements	33%

Table 22: Huron (Jackson – 1st) Safety Benefit Breakout

Capital costs for the proposed segment improvements are shown in Table 23. Note that this table outlines non-discounted capital costs and does not include ongoing maintenance costs. The roadway improvements for Huron are assumed to be milling and one course asphalt overlay from Jackson to 1st. The cost per lane mile for milling and one course overlay is based on average costs per lane mile for similar projects included in the MDOT 2023-2026 TIP program with a 35% Ann Arbor City factor added to account for work performed within city limits. Other unit costs were developed with the coordination of Ann Arbor for recently completed projects and based on MDOT 2023 Weighted Average Bid Price Report with 3% average escalation to a 2028 construction start.

			UNIT COST		TOTAL COST	
	Units	**Quantity**	**Low**	**High**	**Low**	**High**
Mill & Resurface	Lane Miles	3.00	$480,000	$600,000	$1,440,000	$1,800,000
Dedicated Bus Lanes	LF	7,910	$15	$20	$118,650	$158,200
Added Crosswalk w/pedestrian Refuge Islands	# of Islands	2	$24,000	$30,000	$48,000	$60,000
LPI	# of Signals	5	$4,000	$20,000	$20,000	$100,000
Reduced Speed Limit	# of Signs	3	$100	$250	$300	$750
- Bump Outs	# of Bump Outs	2	$20,000	$25,000	$40,000	$50,000
Subtotal					$1,666,950	$2,168,950
Escalation					$1,932,452	$2,514,408
Design Contingency 10%					$193,245	$251,441
Soft Costs - Design Team 15%					$289,868	$377,161
CM/REI fee 8%					$154,596	$201,153
Grand Total					**$2,570,000**	**$3,344,000**

Table 23: Huron (Jackson – 1st) Detailed Capital Cost Estimate

The breakdown of total estimated benefits and costs can be found below in Table 24. The total net costs show both a low estimate and a high estimate and are inclusive of ongoing maintenance to the roadway. Following each cost estimate is a benefit-cost ratio to quantify the benefits of improvements relative to costs. Benefits outweigh the costs for this segment. Assuming high-cost estimates, the segment yields a BCR of 1.88; assuming low-cost estimates, the segment yields a BCR of 1.50.

Project Costs and Benefits Over 20 Years		
Capital Costs and Ongoing Maintenance		
	Total Cost - High Estimate	Total Cost - Low Estimate
Total Capital Cost Estimate	$2,570,000	$3,344,000
Total Capital Maintenance Estimate	$6,089,000	$7,611,000
Total O&M Estimate	$763,000	$763,000
Net Cost Estimate *(Undiscounted)*	$9,422,000	$11,719,000
Net Cost Estimate *(7% Discount)*	**$3,992,000**	**$5,008,000**
Benefits		
Net Benefits	**$7,505,000**	
Benefit-Cost Ratio	**1.88**	**1.50**

Table 24: Huron (Jackson – 1st) Benefit-Cost Summary

Additional analysis was conducted to generate a range of benefits by modifying the core assumption of a 56% increase in transit ridership after improving from standard bus service to BRT. This assumption was pulled from the Transit Cooperative Research Program (TCRP) Report 118[13], and represents the average increase in ridership found in the study. To generate a range of benefits, the lowest (20%) and highest (100%) increase in ridership found in the report were both used to produce a high-end and low-end benefit estimate. Changing this assumption directly impacted seven of the nine benefits: Emissions Reduction, Noise Reduction, Facility Amenity, Transit Travel Time Savings, Health Benefits, Household Cost Savings and Street Maintenance Savings. Table 25 shows the impact to segment benefits when using each assumption, revealing that the total benefits could decrease by 9% or increase by 11% if this assumption was changed.

	Low Estimate (20% Transit Ridership Increase)	Mid Estimate (56% Transit Ridership Increase)	High Estimate (100% Transit Ridership Increase)
Benefit Category	**Total Discounted Benefits**	**Total Discounted Benefits**	**Total Discounted Benefits**
Safety Benefit	$4,431,000	$4,431,000	$4,431,000
Emissions Reduction (NOx, PM2.5, CO2)	$11,000	$31,000	$56,000
Noise Reduction Benefit	$300	$1,000	$1,700
Facility Amenity Benefit	$605,000	$627,000	$655,000
Transit Travel Time Savings	$1,064,000	$1,176,000	$1,313,000
Health Benefits	$187,000	$524,000	$936,000
Household Cost Savings	$88,000	$245,000	$438,000
Street Maintenance Savings	$300	$900	$1,600
Property Values	$468,000	$468,000	$468,000
Ecosystem Services	$0	$0	$0
Total	**$6,854,000**	**$7,505,000**	**$8,300,000**
% Change	**-9%**	**-**	**+11%**

Table 25: Huron (Jackson – 1st) Benefits Range

[13] Transit Cooperative Research Program Report 118

Huron Street (1st Street – Washtenaw Avenue) Existing Cross Section

The existing typical cross section varies along the corridor between 1st St to Division Ave, and Division Avenue to Washtenaw Avenue. The two different cross sections for this segment are shown below.

The existing typical cross section for Huron Street from 1st Street to Washtenaw Avenue is shown below in Figure 13, along with additional existing conditions details in Table 26. One focus intersection along this section is at Division Street, identified as a priority location for safety improvements in the Ann Arbor Comprehensive Transportation Plan.

HURON (1ST – DIVISION)	
ROW	82.25’
AADT	13,100
Speed limit	30 mph

Table 26: Huron St Existing Conditions (1st Street to Division Street)

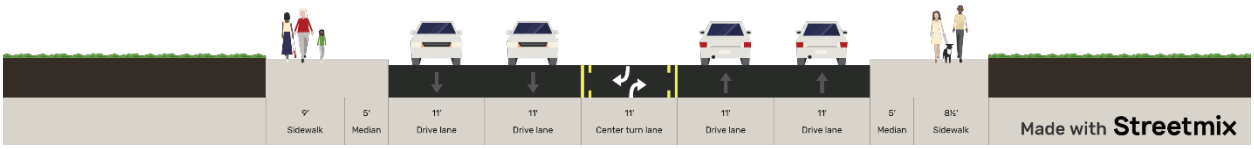

Figure 13: Huron Street Typical Cross Section (1st Street to Division Street)

The existing cross section from Division Street to Washtenaw Avenue is shown below in Figure 14, along with additional existing conditions in Table 27. The focus intersection along this section is at State Street, identified as a priority location for safety improvements in the Ann Arbor Comprehensive Transportation Plan.

HURON (DIVISION – WASHTENAW)	
ROW	66’ – 72.5’
AADT	13,100
Speed limit	30 mph

Table 27: Huron Street Existing Conditions (Division Street to Washtenaw Avenue)

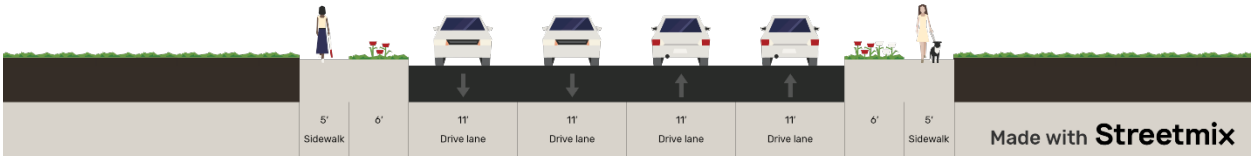

Figure 14: Huron Street Typical Cross Section (Division Street to Washtenaw Avenue)

Huron Street (1st Street – Washtenaw Avenue) Potential Future Concept

The future concept looks at the segment from 1st Street to Washtenaw Avenue The potential future concept for Huron Street from 1st Street to Washtenaw Avenue can be found in Figure 15, showing the potential section improvement of dedicated bus lanes. A crosswalk at Glen Avenue and Fletcher Street, leading pedestrian intervals at all signalized intersections, and a reduced speed limit (25 mph) are included in a potential future set of improvements:

Figure 15: Huron Street Potential Future Cross Section (Division Street to Washtenaw Avenue)

Benefit-Cost Analysis

Benefits for Huron Street from 1st Street to Washtenaw Avenue total an estimated $23.8 million over a 20-year project life cycle. The resulting benefits can be found below in Table 28.

Benefit Category	Total Discounted Benefits	Share of Total Quantified Benefits
Safety Benefit	$ 14,633,000	61.3%
Emissions Reduction (NOx, PM2.5, CO2)	$ 49,000	0.2%
Noise Reduction Benefit	$ 1,500	0.0%
Facility Amenity Benefit	$ 3,203,000	13.4%
Transit Travel Time Savings	$ 4,736,000	19.8%
Health Benefits	$ 532,000	2.2%
Household Cost Savings	$ 382,000	1.6%
Street Maintenance Savings	$ 1,400	0.0%
Property Values	$ 340,000	1.4%
Ecosystem Services	$ -	0.0%
Total	$ 23,877,000	100.0%

Table 28: Huron (1st - Washtenaw) Future Concept Benefits

For this segment, over 90% of quantifiable benefits come from safety improvements, improvements to pedestrian and transit rider facilities, and transit travel time savings, with over 60% of total quantifiable benefits coming from safety alone. Since safety encompasses a disproportionate share of benefits, the relative magnitude of safety benefits for each improvement is broken out. For this segment, over 80% of safety benefits are realized through reducing the speed limit, implementing transit improvements, and adding an LPI at Division Street. Notably, the LPI at Division Street accounts for more than a quarter of all safety benefits and nearly 16% of the total segment benefits. Table 29 shows the safety benefits breakdown by improvement for the segment.

Safety Benefit by Improvement	Share of Safety Benefits
Speed Limit Reduction	18%
LPI & Crosswalk at Glen Ave	1%
LPI & Crosswalk at Fletcher St	5%
LPI at State St	3%
LPI at Division St	26%
LPI at 5th Ave	6%
LPI at 4th Ave	1%
LPI at Main St	3%
LPI at Ashley St	0%
Corridor-Long Transit Intersection Improvements	37%

Table 29: Huron (1st - Washtenaw) Safety Benefit Breakout

Capital costs for the proposed segment improvements are shown in Table 30 on the next page. Note that this table outlines non-discounted capital costs and does not include ongoing maintenance costs. The roadway improvements for Huron Street are assumed to be milling and one course asphalt overlay from 1st Street to N Main Street and full roadway reconstruction from N Main Street to Washtenaw Avenue. The cost per lane mile for milling and one course overlay and reconstruction are based on average costs per lane mile for similar projects included in the MDOT 2023-2026 TIP program with a 35% Ann Arbor City factor added to account for work performed within city limits. Other unit costs were developed with the coordination of Ann Arbor for recently completed projects and based on MDOT 2023 Weighted Average Bid Price Report with 3% average escalation to a 2028 construction start.

Table 30: Huron (1st - Washtenaw) Detailed Capital Cost Estimate

			UNIT COST		TOTAL COST	
	Units	**Quantity**	**Low**	**High**	**Low**	**High**
Huron: 1st St to N Main St						
Mill & Resurface	Lanes Miles	0.65	$480,000	$600,000	$312,000	$390,000
Dedicated Bus Lanes	LF	1,360	$15	$20	$20,400	$27,200
LPI	# of Signals	4	$4,000	$20,000	$16,000	$80,000
Reduced Speed Limit	# of Signs	1	$100	$250	$100	$250
Subtotal					$348,500	$497,450
Escalation					$404,007	$576,681
Design Contingency 10%					$40,401	$57,668
Soft Costs - Design Team 15%					$60,601	$86,502
CM/REI Fee 8%					$32,321	$46,134
Grand Total					**$537,000**	**$767,000**
Huron: N Main St to Division St						
Reconstruction	Lane Miles	1.2	$2,400,000	$3,000,000	$2,880,000	$3,600,000
Dedicated Bus Lanes	LF	2,510	$15	$20	$37,650	$50,200
LPI	# of Signals	6	$4,000	$20,000	$24,000	$120,000
Reduced Speed Limit	# of Signs	1	$100	$250	$100	$250
Subtotal					$2,941,750	$3,770,450
Escalation					$3,410,295	$4,370,985
Design Contingency 10%					$341,029	$437,098
Soft Costs - Design Team 15%					$511,544	$655,648
CM/REI Fee 8%					$272,824	$349,679
Grand Total					**$4,536,000**	**$5,813,000**
Huron: Division St to Washtenaw Ave						
Reconstruction	Lane Miles	2.12	$2,400,000	$3,000,000	$5,088,000	$6,360,000
Dedicated Bus Lanes	LF	5,570	$15	$20	$83,550	$111,400
Added Crosswalk w/pedestrian Refuge Islands	# of Islands	2	$24,000	$30,000	$48,000	$60,000
LPI	# of Signals	7	$4,000	$20,000	$28,000	$140,000
Reduced Speed Limit	# of Signs	3	$100	$250	$300	$750
Subtotal					$5,247,850	$6,672,150
Escalation					$6,083,696	$7,734,851
Design Contingency 10%					$608,370	$773,485
Soft Costs - Design Team 15%					$912,554	$1,160,228
CM/REI Fee 8%					$486,696	$618,788
Grand Total					**$8,091,000**	**$10,287,000**
Huron 1st to Washtenaw Total					**$13,164,000**	**$16,868,000**

The breakdown of total estimated benefits and costs can be found below in Table 31. The total net costs show both a low estimate and a high estimate and are inclusive of ongoing maintenance to the roadway. Following each cost estimate is a benefit-cost ratio to quantify the benefits of improvements relative to costs. The benefits outweigh the costs for this segment of Huron Street, with a BCR of 1.61 assuming high-cost estimates and a BCR of 2.03 assuming low-cost estimates.

Project Costs and Benefits Over 20 Years		
Capital Costs and Ongoing Maintenance		
	Total Cost - High Estimate	Total Cost - Low Estimate
Total Capital Cost Estimate	$13,164,000	$16,868,000
Total Capital Maintenance Estimate	$8,058,000	$10,072,000
Total O&M Estimate	$874,000	$874,000
Net Cost Estimate *(Undiscounted)*	$22,096,000	$27,814,000
Net Cost Estimate *(7% Discount)*	**$11,739,000**	**$14,869,000**
Benefits		
Net Benefits	**$23,877,000**	
Benefit-Cost Ratio	**2.03**	**1.61**

Table 31: Huron (1st - Washtenaw) Benefit-Cost Summary

Additional analysis was conducted to generate a range of benefits by modifying the core assumption of a 56% increase in transit ridership after improving from standard bus service to BRT. This assumption was pulled from the Transit Cooperative Research Program (TCRP) Report 118[14], and represents the average increase in ridership found in the study. To generate a range of benefits, the lowest (20%) and highest (100%) increase in ridership found in the report were both used to produce a high-end and low-end benefit estimate. Changing this assumption directly impacted seven of the nine benefits: Emissions Reduction, Noise Reduction, Facility Amenity, Transit Travel Time Savings, Health Benefits, Household Cost Savings and Street Maintenance Savings. Table 32 shows the impact to segment benefits when using each assumption, revealing that the total benefits could decrease by 3% or increase by 4% if this assumption was changed.

	Low Estimate (20% Transit Ridership Increase)	Mid Estimate (56% Transit Ridership Increase)	High Estimate (100% Transit Ridership Increase)
Benefit Category	Total Discounted Benefits	Total Discounted Benefits	Total Discounted Benefits
Safety Benefit	$14,633,000	$14,633,000	$14,633,000
Emissions Reduction (NOx, PM2.5, CO2)	$17,000	$49,000	$87,000
Noise Reduction Benefit	$500	$1,500	$2,700
Facility Amenity Benefit	$3,191,000	$3,203,000	$3,218,000
Transit Travel Time Savings	$4,586,000	$4,736,000	$4,920,000
Health Benefits	$190,000	$532,000	$949,000
Household Cost Savings	$136,000	$382,000	$682,000
Street Maintenance Savings	$500	$1,400	$2,500
Property Values	$340,000	$340,000	$340,000
Ecosystem Services	$0	$0	$0
Total	**$23,094,000**	**$23,877,000**	**$24,834,000**
% Change	**-3%**	**-**	**+4%**

Table 32: Huron (1st - Washtenaw) Benefits Range

[14] Transit Cooperative Research Program Report 118

Washtenaw Avenue

Washtenaw Avenue is a major thoroughfare in the city which runs in a northwest-southeast direction. It connects downtown Ann Arbor and University of Michigan central campus to the southwest areas of the city, US-23 to the east, and onward to the neighboring City of Ypsilanti. Washtenaw Avenue is divided into two segments for analysis.

Washtenaw Avenue (Huron Street – E Stadium Boulevard) Existing Cross Section

The existing typical cross section for Washtenaw Avenue from Huron Street to E Stadium Boulevard is shown below in Figure 16, along with additional existing conditions in Table 33. The focus intersections along this corridor are at Devonshire Road/Austin Avenue, Hill Street, and Geddes Avenue, identified as priority locations for safety improvements in the Ann Arbor Comprehensive Transportation Plan.

WASHTENAW (HURON – E STADIUM)	
ROW	66’ – 72.5’
AADT	13,100
Speed limit	30 mph

Table 33: Washtenaw Ave Existing Conditions (Huron Street to Stadium Blvd)

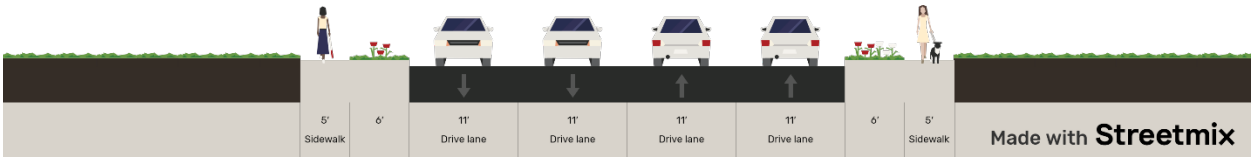

Figure 16: Washtenaw Avenue Typical Cross Section (Huron Street to Stadium Boulevard)

Washtenaw Avenue (Huron Street – E Stadium Boulevard) Potential Future Concept

The potential concept for Washtenaw Avenue from Huron Street to Stadium Boulevard is shown below in Figure 17, outlining the potential section improvement of dedicated bus lanes. In addition to dedicated bus lanes, the following improvements are included in a potential future set of improvements:

- Crosswalk at Brockman Boulevard
- Bumpouts at Devonshire Road
- Pedestrian crossing at Wayne Street
- Hardened centerline (left-turn traffic calming) at Hill Street
- Leading pedestrian intervals at all signalized intersections
- Pedestrian refuge island at Geddes Avenue
- Reduced speed limit (25-30 mph)

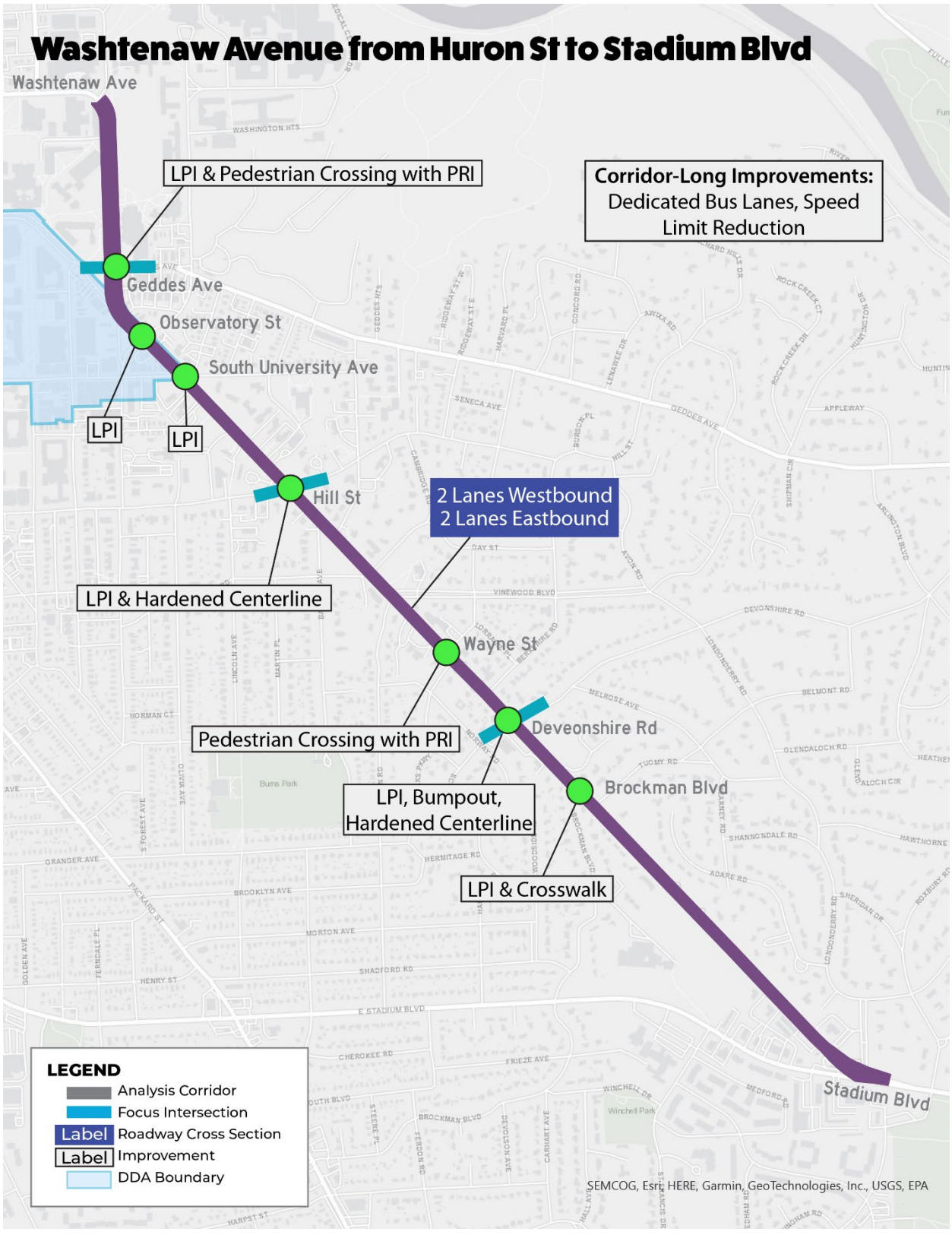

Figure 17: Washtenaw Avenue Potential Future Set of Improvements (Huron Street to E Stadium Boulevard)

Benefit-Cost Analysis

Benefits for Washtenaw Avenue from Huron Street to E Stadium Boulevard total an estimated $39 million over a 20-year project life cycle. The resulting benefits can be found below in Table 34.

Benefit Category	Total Discounted Benefits	Share of Total Quantified Benefits
Safety Benefit	$ 21,835,000	55.8%
Emissions Reduction (NOx, PM2.5, CO2)	$ 197,000	0.5%
Noise Reduction Benefit	$ 6,000	0.0%
Facility Amenity Benefit	$ 3,616,000	9.2%
Transit Travel Time Savings	$ 7,608,000	19.4%
Health Benefits	$ 3,582,000	9.2%
Household Cost Savings	$ 1,537,000	3.9%
Street Maintenance Savings	$ 6,000	0.0%
Property Values	$ 639,000	1.6%
Ecosystem Services	$ 96,000	0.2%
Total	$ 39,120,000	100.0%

Table 34: Washtenaw (Huron – Stadium) Future Concept Benefits

For this segment, over 90% of quantifiable benefits come from safety improvements, improvements to pedestrian and transit rider facilities, transit travel time savings, and health benefits, with over 55% of total quantifiable benefits coming from safety alone. Since safety encompasses a disproportionate share of benefits, the relative magnitude of safety benefits for each improvement is broken out in Table 35. For this segment, over 60% of safety benefits are realized through reducing the speed limit and implementing transit improvements.

Safety Benefit by Improvement	Share of Safety Benefits
Speed Limit Reduction	37%
LPI & Crosswalk at Brockman	1%
LPI, Bumpout (East Side) at Devonshire	2%
Pedestrian Crossing with PRI at Wayne St	22%
LPI at Hill St	6%
LPI at S University Ave	1%
LPI at Observatory St	1%
LPI, PRI at Geddes Ave	4%
Corridor-Long Transit Intersection Improvements	26%

Table 35: Washtenaw Ave (Huron – E Stadium) Safety Benefit Breakout

Capital costs for the proposed segment improvements are shown in Table 36. Note that this table outlines non-discounted capital costs and does not include ongoing maintenance costs. The roadway improvements for Washtenaw are assumed to be full roadway reconstruction from Huron to Stadium. The cost per lane mile for reconstruction is based on average costs per lane mile for similar projects included in the MDOT 2023-2026 TIP program. Other unit costs were developed with the coordination of Ann Arbor for recently completed projects and based on MDOT 2023 Weighted Average Bid Price Report with 3% average escalation to a 2028 construction start.

			UNIT COST		TOTAL COST	
	Units	**Quantity**	**Low**	**High**	**Low**	**High**
Reconstruction	Lane Miles	7.84	$2,400,000	$3,000,000	$18,816,000	$23,520,000
Dedicated Bus Lanes	LF	20,710	$15	$20	$310,650	$414,200
Added crosswalk w/ped Refuge Islands	# of Islands	2	$24,000	$30,000	$48,000	$60,000
LPI	# of Signals	21	$4,000	$20,000	$84,000	$420,000
Reduced Speed Limit	# of Signs	8	$100	$250	$800	$2,000
- Pedestrian Refuge Island	# of Islands	2	$24,000	$30,000	$48,000	$60,000
- Bump Outs	# of Bump Outs	2	$20,000	$25,000	$40,000	$50,000
- Hardened Centerlines	Each	2	$15,000	$19,000	$30,000	$38,000
Subtotal					$19,377,450	$24,564,200
Escalation					$22,463,775	$28,476,640
Design Contingency 10%					$2,246,378	$2,847,664
Soft Costs - Design Team 15%					$3,369,566	$4,271,496
CM/REI Fee 8%					$1,797,102	$2,278,131
Grand Total					**$29,877,000**	**$37,874,000**

Table 36: Washtenaw (Huron – E Stadium) Detailed Capital Cost Estimate

The breakdown of total estimated benefits and costs can be found below in Table 37. The total net costs show both a low estimate and a high estimate and are inclusive of ongoing maintenance to the roadway. Following each cost estimate is a benefit-cost ratio to quantify the benefits of improvements relative to costs. For this segment of Washtenaw, the benefits outweigh the costs by at least a factor of 1.23, with a potentially higher benefit-cost ratio of 1.55 if lower cost estimates are assumed.

Project Costs and Benefits Over 20 Years		
Capital Costs and Ongoing Maintenance		
	Total Cost - High Estimate	Total Cost - Low Estimate
Total Capital Cost Estimate	$29,877,000	$37,874,000
Total Capital Maintenance Estimate	$14,272,000	$17,840,000
Total O&M Estimate	$1,607,000	$1,607,000
Net Cost Estimate *(Undiscounted)*	$45,756,000	$57,321,000
Net Cost Estimate ***(7% Discount)***	**$25,300,000**	**$31,831,000**
Benefits		
Net Benefits	**$39,120,000**	
Benefit-Cost Ratio	**1.55**	**1.23**

Table 37: Washtenaw (Huron – E Stadium) Benefit-Cost Summary

Additional analysis was conducted to generate a range of benefits by modifying the core assumption of a 56% increase in transit ridership after improving from standard bus service to BRT. This assumption was pulled from the Transit Cooperative Research Program (TCRP) Report 118[15], and represents the average increase in ridership found in the study. To generate a range of benefits, the lowest (20%) and highest (100%) increase in ridership found in the report were both used to produce a high-end and low-end benefit estimate. Changing this assumption directly impacted seven of the nine benefits: Emissions Reduction, Noise Reduction, Facility Amenity, Transit Travel Time Savings, Health Benefits, Household Cost Savings and Street Maintenance Savings. Table 38 shows the impact to segment benefits when using each assumption, revealing that the total benefits could decrease by 14% or increase by 17% if this assumption was changed.

Benefit Category	Low Estimate (20% Transit Ridership Increase) Total Discounted Benefits	Mid Estimate (56% Transit Ridership Increase) Total Discounted Benefits	High Estimate (100% Transit Ridership Increase) Total Discounted Benefits
Safety Benefit	$21,835,000	$21,835,000	$21,835,000
Emissions Reduction (NOx, PM2.5, CO2)	$70,000	$197,000	$351,000
Noise Reduction Benefit	$2,000	$6,000	$11,000
Facility Amenity Benefit	$3,209,000	$3,616,000	$4,113,000
Transit Travel Time Savings	$5,852,000	$7,608,000	$9,754,000
Health Benefits	$1,279,000	$3,582,000	$6,396,000
Household Cost Savings	$549,000	$1,537,000	$2,744,000
Street Maintenance Savings	$2,000	$6,000	$10,000
Property Values	$639,000	$639,000	$639,000
Ecosystem Services	$96,000	$96,000	$96,000
Total	**$33,533,000**	**$39,120,000**	**$45,948,000**
% Change	**-14%**	**-**	**+17%**

Table 38: Washtenaw (Huron – E Stadium) Benefits Range

[15] Transit Cooperative Research Program Report 118

Washtenaw Avenue (E Stadium Boulevard – US-23) Existing Cross Section

The existing typical cross section for Washtenaw Avenue from E Stadium Boulevard to US-23 is shown below in Figure 18, along with additional existing conditions in Table 39. The focus intersections along this corridor are at Platt Road and E Stadium Boulevard, identified as priority locations for safety improvements in the Ann Arbor Comprehensive Transportation Plan.

WASHTENAW (STADIUM – US 23)	
ROW	100’
AADT	24,000-29,000
Speed limit	45 mph

Table 39: Washtenaw Ave Existing Conditions (E Stadium Blvd to US23)

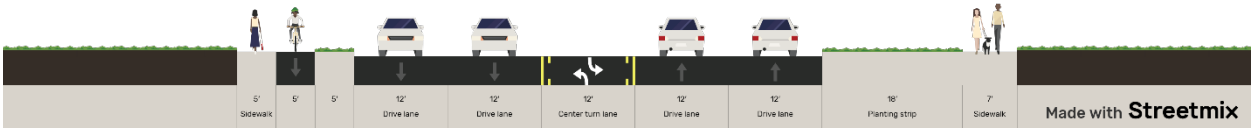

Figure 18: Washtenaw Ave Typical Cross Section (E Stadium Blvd to US-23)

Washtenaw Avenue (E Stadium Boulevard – US-23) Potential Future Concept

The potential concept for Washtenaw Avenue from E Stadium Boulevard to US-23 can be found in Figure 19, showing the potential section improvement of dedicated bus lanes. In addition to dedicated bus lanes, the following improvements are included in the potential future set of improvements:

- Crosswalks at Yost Boulevard
- A pedestrian crossing near 3035 Washtenaw Avenue
- Green painted bike lanes at Platt Road
- Leading pedestrian intervals at all signalized intersections
- Roundabout at E Stadium Boulevard
- Reduced speed limit (35 mph)

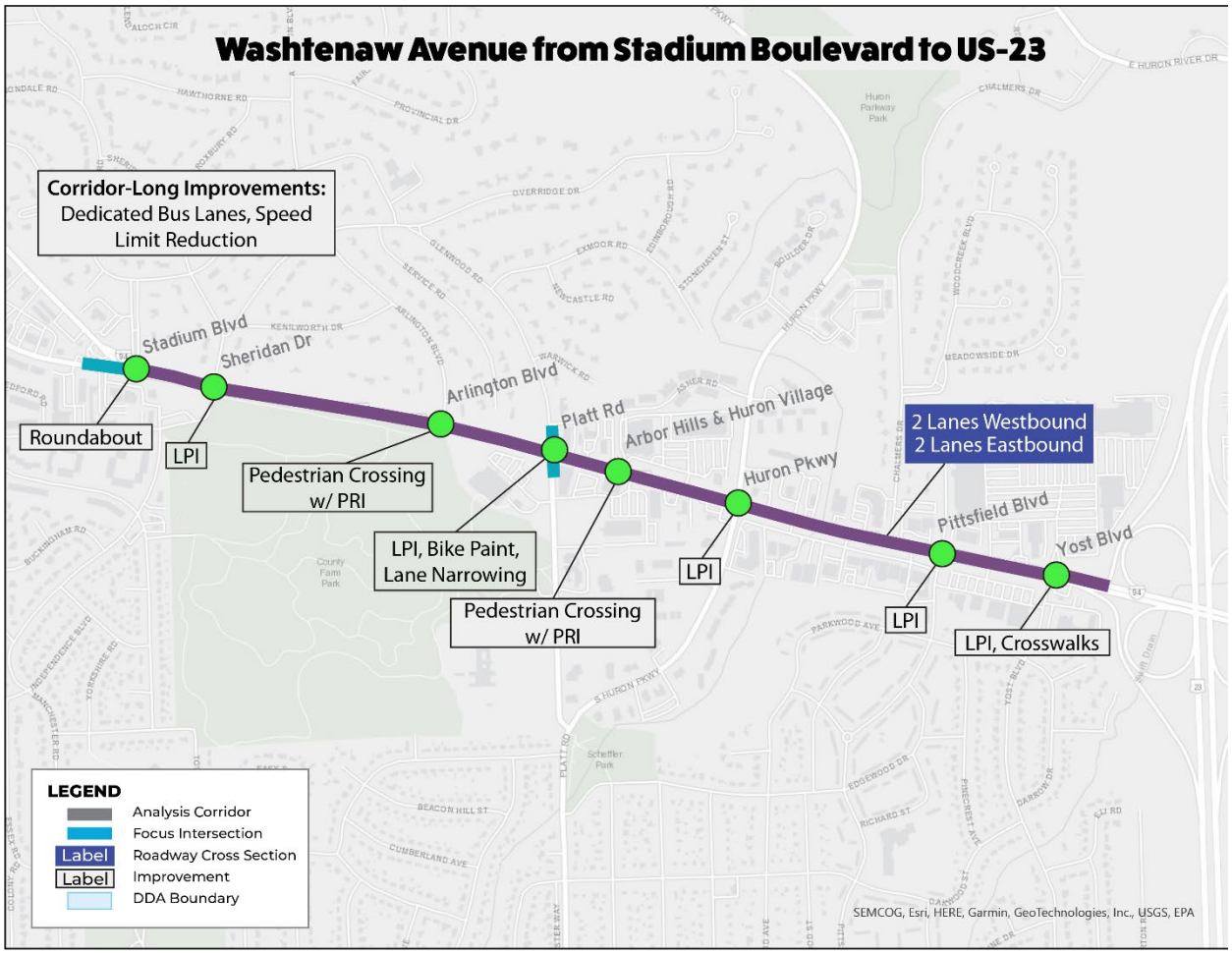

Figure 19: Washtenaw Ave Potential Future Set of (E Stadium Blvd to US-23)

Benefit-Cost Analysis

Benefits for Washtenaw Avenue from E Stadium Boulevard to US-23 total an estimated $34 million over a 20-year project life cycle. The resulting benefits can be found below in Table 40.

Benefit Category	Total Discounted Benefits	Share of Total Quantified Benefits
Safety Benefit	$ 17,444,000	51.3%
Emissions Reduction (NOx, PM2.5, CO2)	$ 147,000	0.4%
Noise Reduction Benefit	$ 5,000	0.0%
Facility Amenity Benefit	$ 2,898,000	8.5%
Transit Travel Time Savings	$ 9,429,000	27.7%
Health Benefits	$ 2,675,000	7.9%
Household Cost Savings	$ 1,148,000	3.4%
Street Maintenance Savings	$ 4,000	0.0%
Property Values	$ 235,000	0.7%
Ecosystem Services	$ 53,000	0.2%
Total	$ 34,037,000	100.0%

Table 40: Washtenaw Ave (E Stadium Blvd – US-23) Future Concept Benefits

Over 95% of quantifiable benefits on the segment come from safety improvements, improvements to pedestrian and transit facilities, transit travel time savings and health benefits, with over half of total quantifiable benefits coming from safety alone. Since safety encompasses over half of all benefits, the relative magnitude of safety benefits for each improvement is broken out in Table 41. For this segment, reducing the speed limit, implementing transit improvements, and adding an LPI and green bike paint at Platt account for nearly 90% of the safety benefit.

Safety Benefit by Improvement	Share of Safety Benefits
Speed Limit Reduction	35%
LPI & 2 Crosswalks at Yost	2%
LPI at Pittsfield	2%
LPI at Huron Pkwy	2%
Pedestrian Crossing PRI (3035 Washtenaw)	0%
LPI, Green Bike Paint at Platt Rd	24%
Pedestrian Crossing with PRI (Arlington Blvd)	1%
LPI at Sheridan Dr	4%
Roundabout at Stadium Blvd	2%
Corridor-Long Transit Intersection Improvements	30%

Table 41: Washtenaw Ave (E Stadium Blvd – US-23) Safety Benefit Breakout

Capital costs for the proposed segment improvements are shown in Table 42. Note that this table outlines non-discounted capital costs and does not include ongoing maintenance costs. The roadway improvements for Washtenaw Avenue are assumed to be full roadway reconstruction from E Stadium Boulevard to US23. The cost per lane mile for reconstruction is based on average costs per lane mile for similar projects included in the MDOT 2023-2026 TIP program. Other unit costs were developed with the coordination of Ann Arbor for recently completed projects and based on MDOT 2023 Weighted Average Bid Price Report with 3% average escalation to a 2028 construction start.

			UNIT COST		TOTAL COST	
	Units	**Quantity**	**Low**	**High**	**Low**	**High**
Reconstruction	Lane Miles	8.05	$2,400,000	$3,000,000	$19,320,000	$24,150,000
Roundabout	# of Intersections	1	$1,500,000	$2,000,000	$1,500,000	$2,000,000
Dedicated Bus Lanes	LF	16,950	$15	$20	$254,250	$339,000
Green Painted Bike Lane	LF	250	$10	$20	$2,500	$5,000
Added Crosswalk w/pedestrian Refuge Islands	# of Islands	4	$24,000	$30,000	$96,000	$120,000
LPI	# of Signals	18	$4,000	$20,000	$72,000	$360,000
Subtotal					$21,244,750	$26,974,000
Escalation					$24,628,488	$31,270,259
Design Contingency 10%					$2,462,849	$3,127,026
Soft Costs - Design Team 15%					$3,694,273	$4,690,539
CM/REI Fee 8%					$1,970,279	$2,501,621
Grand Total					**$32,756,000**	**$41,589,000**

Table 42: Washtenaw Ave (Stadium – US-23) Detailed Capital Cost Estimate

The breakdown of total estimated benefits and costs can be found below in Table 43. The total net costs show both a low estimate and a high estimate and are inclusive of ongoing maintenance to the roadway. Following each cost estimate is a benefit-cost ratio to quantify the benefits of improvements relative to costs. For this segment of Washtenaw Avenue, the benefits are outweighed by costs by a factor of 0.97 if high-cost estimates are assumed; however, benefits outweigh costs by a factor of 1.23 if lower cost estimates are assumed.

Project Costs and Benefits Over 20 Years		
Capital Costs and Ongoing Maintenance		
	Total Cost - High Estimate	Total Cost - Low Estimate
Total Capital Cost Estimate	$32,756,000	$41,589,000
Total Capital Maintenance Estimate	$16,339,000	$20,423,000
Total O&M Estimate	$1,356,000	$1,356,000
Net Cost Estimate *(Undiscounted)*	$50,450,000	$63,368,000
Net Cost Estimate *(7% Discount)*	**$27,691,000**	**$34,920,000**
Benefits		
Net Benefits	**$34,037,000**	
Benefit-Cost Ratio	**1.23**	**0.97**

Table 43: Washtenaw (Stadium – US-23) Benefit-Cost Summary

Additional analysis was conducted to generate a range of benefits by modifying the core assumption of a 56% increase in transit ridership after improving from standard bus service to BRT. This assumption was pulled from the Transit Cooperative Research Program (TCRP) Report 118[16], and represents the average increase in ridership found in the study. To generate a range of benefits, the lowest (20%) and highest (100%) increase in ridership found in the report were both used to produce a high-end and low-end benefit estimate. Changing this assumption directly impacted seven of the nine benefits: Emissions Reduction, Noise Reduction, Facility Amenity, Transit Travel Time Savings, Health Benefits, Household Cost Savings and Street Maintenance Savings. Table 44 shows the impact to segment benefits when using each assumption, revealing that the total benefits could decrease by 16% or increase by 19% if this assumption was changed.

	Low Estimate (20% Transit Ridership Increase)	Mid Estimate (56% Transit Ridership Increase)	High Estimate (100% Transit Ridership Increase)
Benefit Category	**Total Discounted Benefits**	**Total Discounted Benefits**	**Total Discounted Benefits**
Safety Benefit	$17,444,000	$17,444,000	$17,444,000
Emissions Reduction (NOx, PM2.5, CO2)	$52,000	$147,000	$262,000
Noise Reduction Benefit	$2,000	$5,000	$8,000
Facility Amenity Benefit	$2,297,000	$2,898,000	$3,632,000
Transit Travel Time Savings	$7,253,000	$9,429,000	$12,088,000
Health Benefits	$955,000	$2,675,000	$4,777,000
Household Cost Savings	$410,000	$1,148,000	$2,049,000
Street Maintenance Savings	$2,000	$4,000	$8,000
Property Values	$235,000	$235,000	$235,000
Ecosystem Services	$53,000	$53,000	$53,000
Total	**$28,703,000**	**$34,037,000**	**$40,557,000**
% Change	**-16%**	**-**	**+19%**

Table 44: Washtenaw Ave (E Stadium Blvd – US-23) Benefits Range

[16] Transit Cooperative Research Program Report 118

Benefit-Cost Analysis Summary

The results of BCAs for each corridor are compiled below for easy reference. The majority of the corridor segments yield a BCR above 1.0, showing a net positive benefit could be expected. Table 45 summarizes the total quantifiable benefits for each segment, along with the benefit-cost ratio for both low and high-cost estimates.

While the quantifiable benefits of assuming ownership of each segment is not above 1.0 for all corridors, there may be other benefits to transferring ownership that are explored in the following section.

Segment	*Total Benefits*	*Benefit-Cost Ratio (Low-Cost)*	*Benefit-Cost Ratio (High-Cost)*
N Main St (M-14 – Huron)	$19,830,000	0.98	0.78
Jackson Ave (I-94 – Huron)	$768,000	0.02	0.01
Huron St (Jackson – 1st)	$8,003,000	1.88	1.50
Huron St (1st – Washtenaw)	$23,877,000	2.03	1.61
Washtenaw Ave (Huron – E Stadium)	$39,120,000	1.55	1.23
Washtenaw Ave (E Stadium – US-23)	$34,037,000	1.23	0.97

Table 45: Benefit-Cost Analysis Summary

Impacts to the Ann Arbor Downtown Development Authority

Among the segments included in the benefit-cost analysis, roughly 17% of the total centerline mileage falls within the Ann Arbor Downtown Development Authority (DDA), shown in Figure 20 and Table 46.

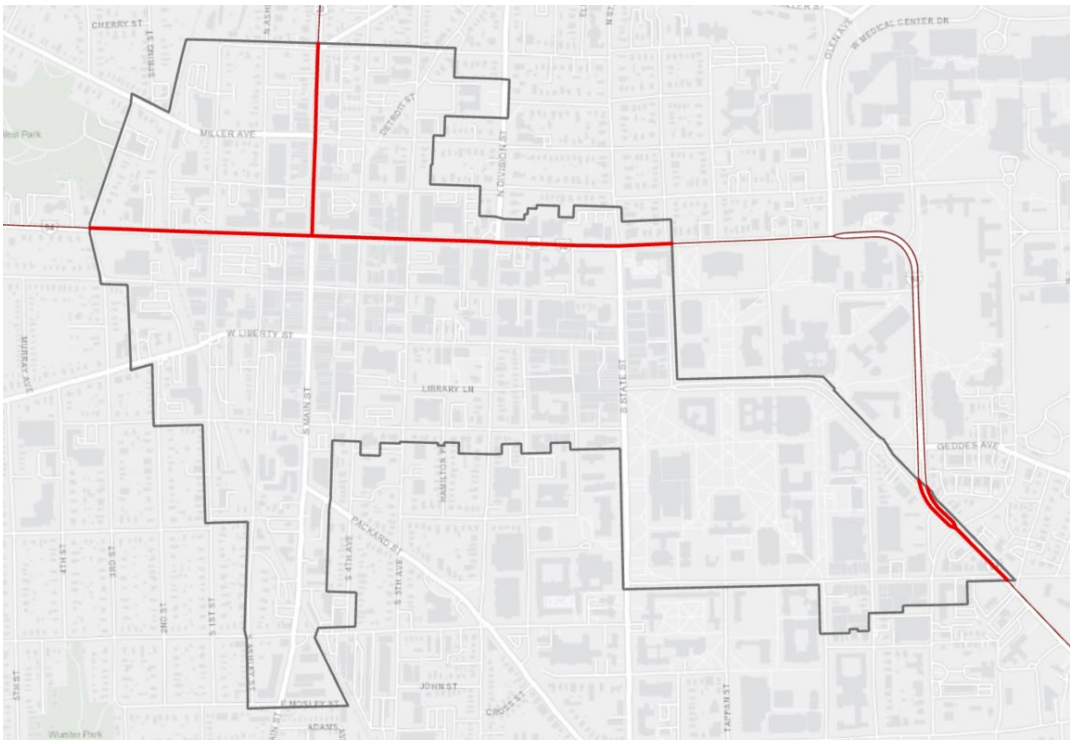

Figure 20: Map of DDA Segments

Segment	*% of Segment in DDA*
N Main St *(M-14 – Huron)*	20%
Jackson Ave (I-94 – Huron)	0%
Huron St (Jackson – 1st)	21%
Huron St (1st – Washtenaw)	67%
Washtenaw Ave (Huron – E Stadium)	10%
Washtenaw Ave (E Stadium – US-23)	0%
Total	17%

Table 46: Share of Segment in DDA

For each of the segments overlapping with the DDA, it is assumed that both benefits and costs to the DDA are proportional with the share of the segment. Table 47 outlines the proportion of benefits falling within the DDA, while Table 48 outlines the proportion of costs falling within the DDA.

Segment	*% of Segment in DDA*	*Total Benefits (7% Discount)*	*Benefits to DDA (7% Discount)*
N Main St *(M-14 – Huron)*	20%	$19,830,000	$3,896,895
Jackson Ave (I-94 – Huron)	0%	$78,000	$0
Huron St (Jackson – 1st)	21%	$7,505,000	$1,552,320
Huron St (1st – Washtenaw)	67%	$23,877,000	$16,066,659
Washtenaw Ave (Huron – E Stadium)	10%	$39,120,000	$3,871,250
Washtenaw Ave (E Stadium - US23)	0%	$34,037,000	$0
Total	**17%**		**$25,387,000**

Table 47: Share of Benefits in the DDA

Segment	*% of Segment in DDA*	*Low-Cost Estimate (7% Discount)*	*High-Cost Estimate (7% Discount)*	*Low-Cost Estimate DDA (7% Discount)*	*High-Cost Estimate DDA (7% Discount)*
N Main St *(M-14 – Huron)*	20%	$20,136,230	$25,562,037	$3,957,074	$5,023,328
Jackson Ave (I-94 – Huron)	0%	$4,638,237	$5,731,332	$0	$0
Huron St (Jackson – 1st)	21%	$3,992,400	$5,008,390	$825,780	$1,035,926
Huron St (1st – Washtenaw)	67%	$11,739,081	$14,868,804	$7,899,142	$10,005,110
Washtenaw Ave (Huron – E Stadium)	10%	$25,300,474	$31,830,605	$2,503,693	$3,149,904
Washtenaw Ave (E Stadium – US-23)	0%	$27,691,171	$34,919,654	$0	$0
Total	**17%**			**$15,185,690**	**$19,214,267**

Table 48: Share of Costs in the DDA

In addition to the quantifiable benefits falling within the DDA, a jurisdictional transfer would enable direct coordination with the City when pursuing any future improvements on trunklines, such as the implementation of No Turn on Red.

Qualitative Considerations

In addition to quantifiable benefits, there are many benefits which cannot be directly monetized and are therefore not included in the benefit-cost analyses. These qualitative benefits are important to consider when deciding to request a jurisdictional transfer. Many align with the City of Ann Arbor's Vision Zero safety and A^{2}ZERO carbon neutrality goals.

The principal benefit of a jurisdictional transfer is that the City has complete control over the design, maintenance, operations, and function of the roadway. This leads to benefits beyond the more tangible design results that were quantified above. While the quantifiable benefits of assuming ownership of each segment may not consistently outweigh the costs in the BCA, the direct and ancillary benefits of being able to make decisions about these roadways should also be considered when deciding whether to pursue a jurisdictional transfer.

In addition to controlling the ultimate design, there is value in the confidence that comes with having control over the entire process – from the planning through maintenance. A jurisdictional transfer brings more certainty to each phase of a project and would help the City ensure that the original design integrity is maintained through subsequent activity, such as restoration of utility work.

With control over the roadways, there is also far greater potential to make improvements to the roadways that align with the City's existing plans and goals, such as Ann Arbor's Climate Change Plan, Vehicle Miles Traveled (VMT) reduction goal, and Vision Zero goal. It allows for designers to match a roadway design to future changes in land use, synchronizing transportation investments with context goals and not simply what is existing. Within the DDA, the trunklines could be designed consistent with the Downtown Street Guide, yielding a more comprehensive approach to the downtown character and contribute to the economic vitality of the district. In addition, operations decisions, such as transit signal priority, leading pedestrian intervals, and no turn on red policies, can be undertaken alongside the design to best meet the needs and goals of the individual project and the community, rather than with the narrow focus of what works best for the operations of the roadway.

Designs on individual corridors and projects also have broader reach that is impossible to quantify through a project-specific BCA. They can fill gaps in bicycle or pedestrian networks, unlocking trips that would otherwise have been unsafe or unappealing and thereby providing better access to destinations and a more equitable transportation system overall.

The current approach to trunkline design prioritizes motor vehicle throughput and minimizing motor vehicle travel time. Changes to the design of these roadways, as illustrated in the high-level scenarios analyzed in this study, reallocate space and priority for the safety, comfort, and reliability of pedestrians, cyclists, and transit users. Although this study did not measure changes to the travel time and reliability of motor vehicle trips, reallocation of space and priority is expected to increase travel times and decrease reliability for people traveling in private motor vehicles during peak hours.

Next Steps for Ann Arbor

Historically, the jurisdictional transfer process takes years. Many details must be agreed upon before a transfer can take place, including: the length of the roadway being transferred, the cost it will take to bring the transferred roadway to a state of good repair for 10 years, and any cash payments that will be part of the agreement. Should Ann Arbor decide to pursue a Jurisdictional Transfer with MDOT, next steps for the City include:

- **Approach MDOT with a Proposal**: This document should contain an estimate of what it would take to bring the trunklines up to a state of good repair for at least 5 years. The proposal should include the geographic extents of Trunklines that the City desires to take over and the dollar amount expected from MDOT to bring the roads up to a state of good repair. The work of this study can serve as a starting point for negotiations with MDOT should Ann Arbor decide to pursue a jurisdictional transfer of one or more corridors.

- **Negotiate with MDOT**: Both parties must agree to the transfer, or the transfer will not take place. The parties must agree on the capital improvements that are necessary before Ann Arbor takes over the trunklines. This can either be by way of capital projects completed by MDOT, or by funds provided by MDOT to Ann Arbor for Ann Arbor to complete the projects. If it is determined that Ann Arbor will receive funds and complete the necessary projects, both when Ann Arbor receives the funds, and what commitments Ann Arbor must make to deliver the projects, will be part of the negotiations.

- **Draft an MOU:** All conditions of the transfer must be documented in an MOU between Ann Arbor and MDOT.

- **Pass a Resolution:** Ann Arbor City Council will pass an internal resolution accepting the roadways.

- **Finalize MOU**: Both parties must sign the legally binding MOU.

- **Complete transfer**: After an MOU is accepted, there will be a one-time payment from MDOT to Ann Arbor upon transfer completion to “cover” maintenance of the transferred roadways. This amount is formula-driven and was calculated by MDOT to be approximately $32,000 per transferred major roadway mile, which is less than two years of the annual payments which Ann Arbor currently receives to maintain the trunklines. The City should present MDOT with a plan or budget for bridging the maintenance gap for the trunkline highways once the segments are transferred.

Following the transfer of any roadways, the City should assess the needs and opportunities for location-specific and/or corridor-wide improvements above and beyond what was agreed to within the MOU. The scale of investment needed for each should be determined, alongside a projected timeline. Small-scale, high-impact safety interventions or operational changes, such as LPIs or pedestrian refuge islands, can be achieved in the short-term whereas larger corridor reconfigurations will take more time and greater financial resources. The City should assess these projects alongside other priorities and outline a funding strategy, including grant opportunities as well as local funding. Regular maintenance costs as well as capital improvements along these corridors should be built into the subsequent Capital Improvement Program.