City of Milwaukee

Department of Public Works

Jerrel Kruschke, P.E.
Commissioner of Public Works

Kevin Muhs, P.E.
City Engineer

May 30, 2025

To: The Common Council of the City of Milwaukee

From: Kevin Muhs, City Engineer

Re: Maintaining and Improving Pavement Quality on City Streets

This document is submitted to you as directed by Amendment 40B to the Adopted 2025 Budget of the City of Milwaukee. It provides an estimate of the funding needed to eliminate City-owned streets with "Poor" pavement quality and discusses potential revenue sources that could be pursued to provide that funding. In addition, this document provides background on the City's pavement rating system and the condition of City-owned streets from the most recently-completed pavement condition survey.

Existing Pavement Quality

The City has long had a robust pavement quality assessment and management system, including a full reassessment of the quality of all City-owned streets approximately every eight years. The most recent assessment—occurring in 2022—involved the development of a condition rating for each street segment using a van specially equipped with lasers and accelerometers to collect surface roughness data along with measurements of cracks and other surface defects. These data were analyzed and used to calculate a Pavement Quality Index (PQI) score for City street segments.

The PQI uses a 100-point scale to rate street pavement quality, with streets slotted into four condition categories based on their score (as shown in Table 1). Using the PQI rating system, approximately 25 percent of lane-miles of City streets are in Poor condition, approximately 40 percent are in Fair condition, and approximately 35 percent are in Good or Excellent condition.

Table 1 – Pavement Quality Index Condition Ratings

PQI Range	Condition
0 to 45	Poor
45 to 70	Fair
70 to 90	Good
90 to 100	Excellent

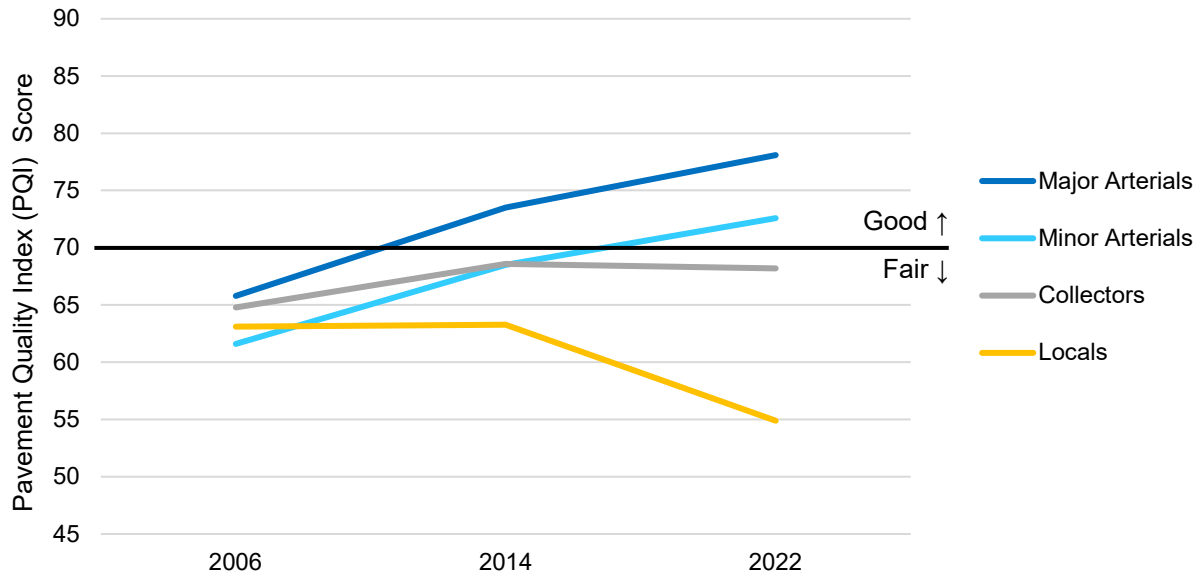
Table 2 breaks this information down further by type of street. City streets are categorized into four functional classifications, traditionally used within transportation engineering to identify whether a street's primary function is to move people and goods along a corridor or to provide access to adjacent land uses. For the purposes of this discussion, its most useful to think of the four categories (major arterial, minor arterial, collector, and local) as roughly delineated by the number of users traveling on a street. Major arterials are the busiest streets, and include streets such as Fond du Lac Avenue, Capitol Drive, North Avenue, S. 27th Street, and Oklahoma Avenue. Examples of minor arterials include 35th Street, Hawley Road, Howard Avenue, and Villard Avenue. Collector streets generally "fill in" the remainder of the half-mile grid, and include examples like N. 84th Street, Congress Street, Cold Spring Road, and S. 51st Street. Local streets include all neighborhood or other side streets, and are typically streets that are not intended to be used by through travelers.

Table 2 – PQI Scores by Functional Class: 2022

Functional Class	PQI Average	Condition	Functional Class Share (%)
Major Arterial	79	Poor	4
		Fair	21
		Good	44
		Excellent	31
Minor Arterial	74	Poor	10
		Fair	26
		Good	40
		Excellent	24
Collector	69	Poor	15
		Fair	30
		Good	38
		Excellent	16
Local	55	Poor	34
		Fair	47
		Good	14
		Excellent	5

As the information in Table 2 shows, on average, higher-trafficked streets in the City are in better condition than those with fewer users. Figure 1 shows that this divide has continued to grow over time, as the PQI of major and minor arterials has, on average, improved, while the average PQI of local streets continues to decline. The next section of this report discusses why this difference by street type is occurring and is likely to continue to grow, at least for the near future.

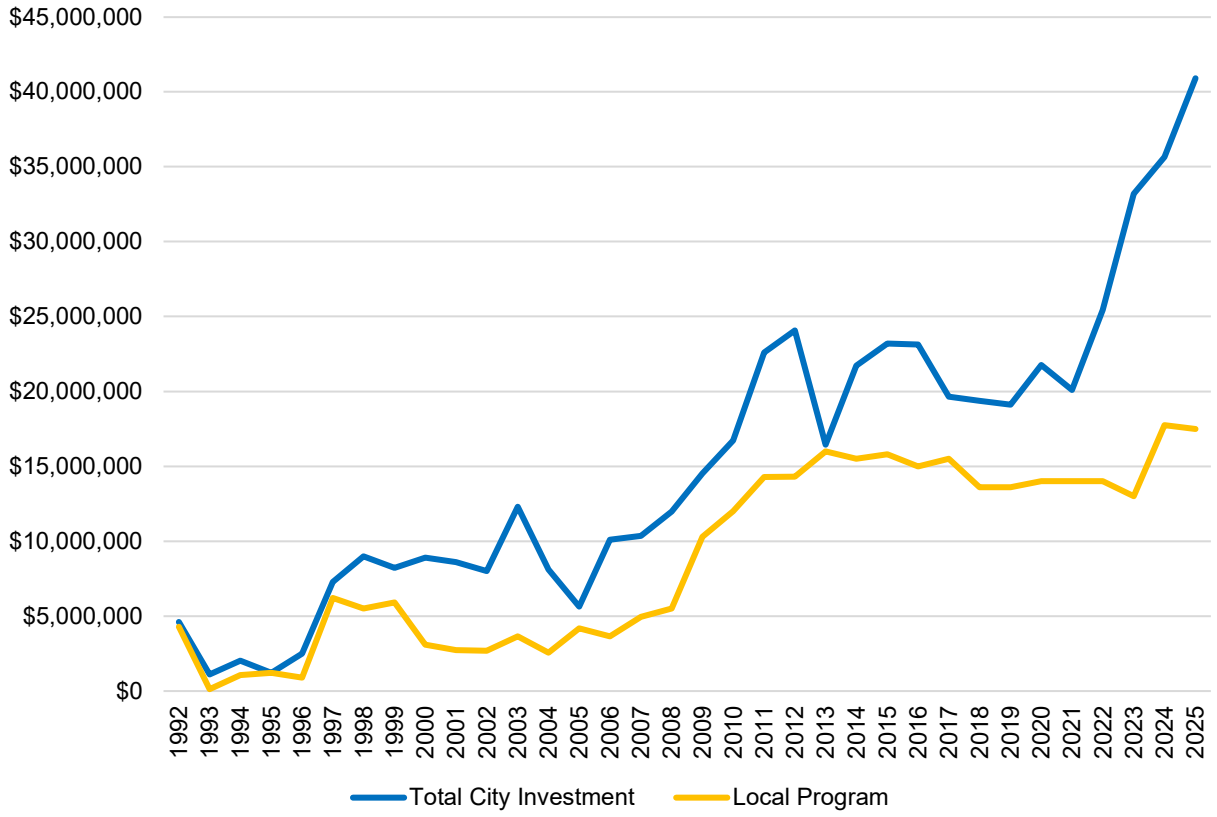
Figure 1 - Average Pavement Condition by Street Class: 2006 to 2022



Street Capital Investment Levels

The City has struggled for at least three decades with dedicating the resources necessary to improve the pavement quality of the City's street network, particularly for those collector and local streets that are essentially ineligible for Federal grant funds. Figure 2, below, shows paving investment levels by the City between 1995 and 2024, as included in each year's adopted capital budget. The blue line represents total City investment in all streets, while the gold line represents the subsection of the City's investment focused on non-arterial streets. The portion of the City's investment focused on arterial streets is used to match various types of Federal grants, and has more variability year-to-year largely due to variability in the number of projects with federal funds that the City is initiating the construction of in any given year. This chart does not include any Tax Increment District-funded investments in paving projects, which can vary significantly from year-to-year, but has recently varied from approximately $500,000 to $2,500,000 annually.

Figure 2 - City Capital Investment in Paving Projects: 1992 to 2025



Maintaining Pavement Quality

To maintain our current Citywide average pavement quality, the Department of Public Works estimates that approximately $60 million needs to be invested annually in street paving projects. Between 2022 and 2025, the total invested in the City's paving program met that target, averaging slightly more than $60.0 million annually when including City cash levy, City borrowing, City TID-funded paving, Federal grants, and State funding. In fact, although each year has varied—particularly in the amount of Federal grant and State funded projects that were initiated in a given year—the overall investment levels in paving on the City's street network have been relatively close to what is needed to maintain our average pavement quality across the entire network since 2011.

The disconnect between those data points and the general perception of the condition of the City's street network is explained by the data shown in Figure 1. Overall, the City is investing what is needed to maintain pavement quality. However, the resources available from the State and Federal governments are required, in nearly all cases, to be targeted at arterial roadways. This is resulting in continued improvement in the average pavement quality of the City's major streets, while collector and local streets tread water or continue to decline.

Eliminating the Backlog

As shown in Figure 2, there were several years before 2009 where the level of investment was relatively low, especially between 1993 and 1996. This timeframe is important relative to our current pavement quality challenges because a typical concrete street can be expected to last 25 to 35 years before a resurfacing investment is needed. A significant portion of the City's streets are nearing or have already reached the end of their lifecycle, and the relative lack of paving projects twenty to thirty years ago means that more recent investment has necessarily focused on streets that are well past the end of their life. As the pavement quality data show, we have not "turned the corner" on the average quality of the City's local streets, which make up approximately 66 percent of the overall lane-miles of streets in the City. This backlog of local paving needs continues to pose challenges for the City and the traveling public.

The Department of Public Works somewhat-regularly updates the estimated funding needed to maintain the quality of the overall street network, as described in the previous section. However, Amendment 40B requested that an estimate be developed of the cost of eliminating the streets in the City rated to have poor pavement quality. It can be argued whether fully eliminating all "poor" quality streets is an appropriate target or not, as it may be appropriate to have some amount of streets with a PQI below 45 to fully utilize the life of that asset before making a substantial capital investment. Nonetheless, the City does have an excess of streets rated to have poor pavement quality and determining the resources needed to fully bring those streets into good or excellent condition may be an appropriate way to measure the City's backlog of paving needs.

As of 2025, the City is estimated to have approximately 1,370 lane miles in poor condition. Estimating what it would take to bring all 1,370 lane miles up to good or excellent condition requires determining the appropriate treatment for a given street segment, which depends on the type and condition of the existing curbs and the existing pavement. As an example, Tar Macadam streets are generally unable to be milled and overlayed (through resurfacing or through high impact paving) due to the material's hardness relative to the strength of pavement milling machines. In another example, where present, stone curbs in the City are typically made of locally-sourced limestone (rather than the granite sometimes used in other cities). Limestone is brittle and difficult to move and reposition as part of a paving project, requiring replacing the curbs entirely.

Based on the Department's records and recent paving program experience with the treatment needed to address poor-quality pavements, the Department estimates that the funding needed to bring all streets that are currently rated as poor up to good or excellent condition is approximately $821 million at current costs. Of that total, $752 million is estimated to be needed for local and collector streets that are generally ineligible for Federal grant funding. Approximately 553 lane-miles of local and collector streets in poor condition are estimated to be eligible to be improved with high-impact paving (with an estimated cost of approximately $97 million), and approximately 680 lane-miles are estimated to require full reconstruction or resurfacing (with an estimated cost of approximately $655 million) to bring the street up to good or excellent condition.

Potential Revenue Sources

The footnote that requested this report instructs that four to five revenue sources be identified to provide additional funding for the City's paving program. There are four options described in greater detail below, as well as a high-level review of other sources that could also be pursued. Importantly, the City of

Milwaukee continues to exist in a revenue-constrained environment, with limited options to identify revenue that doesn't involve reducing the resources available to other City priorities. Therefore, among the options offered below is one that would and one that may require action by the State of Wisconsin.

Enhance the State's Local Road Improvement Program
The Local Road Improvement Program (LRIP) was established in 1991 to help local governments improve deteriorating county and municipal streets. LRIP reimburses up to 50% of eligible costs for a local paving project that will provide at least 10 years of improvement to an existing street's life. Generally, funds cannot be used on street segments that have obtained other State and Federal funding sources.

Typically, the City receives approximately $1 million every other year from this statewide program (out of the approximately $37 million biennial funding in the "entitlement" category). There are also additional funds dedicated to competitive categories within the program, but the limitations and parameters on the competitive categories mean that the City only rarely is successful in obtaining these funds and cannot rely on them as part of planning for our capital needs. In its current form, the program only supports 2 to 4 percent of a typical year's paving program in the City.

To help address the large need described above, the State could substantially increase the entitlement amount available statewide, providing local governments with a reliable amount and expand the size of their paving programs to address significant local road needs. The overall program, even when including the competitive funding, is a relatively small portion of the State's total biennial transportation funding. Given the State's overall fiscal picture, it may be appropriate to make the case that a greater commitment from the State is needed.

Additional Levy-Backed Borrowing
The City could choose to increase the total amount of levy-backed borrowing and dedicate the resources from that increased borrowing to the local paving program. Based on information provided by the Budget and Management Division, the City has utilized approximately 52 percent of its State-mandated overall debt limit. However, increasing the City's overall debt substantially would eventually negatively impact the City's bond rating, which would increase interest rates and costs to the City. The Budget and Management Division noted that the intent of the City's self-imposed levy-supported borrowing limit is to stabilize annual debt service costs, control outstanding debt totals, and minimize the impact of servicing outstanding debt on the City's overall budget.

In 2025, debt service costs accounted for $104 million, or 32 percent of the City's property tax levy. Increased borrowing would remove additional resources generated by the property tax levy that could otherwise go to operating budget priorities, increasing the amount of service modifications or reductions needed to balance the City's annual budget.

Increase the Vehicle Registration Fee
The City first implemented a motor vehicle registration fee, or "wheel tax", in 2008. Initially set at a rate of $20 annually per registered vehicle, it was increased to $30 starting in 2021. The fee currently generates a little more than $9 million annually, and is generally stable year-to-year. Each $10 increase in vehicle registration fee could be expected to generate an additional $3.1 million annually, until reaching a point where it is so high that vehicle registrations decline noticeably.

A November 2021 report[1] by the Wisconsin Policy Forum noted that total taxes and fees on automobile owners were relatively low in Milwaukee compared to the largest city in the adjacent States of Iowa, Illinois, Michigan, and Minnesota for new cars, and were in the middle of the same group for a 12-year-

[1] *Locals Give Wheel Tax the Gas* (Focus: November 2021). Wisconsin Policy Forum. https://wispolicyforum.org/wp-content/uploads/2021/11/Focus-18-2021-Wheel-Taxes.pdf

old used car. Within Wisconsin, 49 municipalities and 13 counties currently charge a local vehicle registration fee, with nine municipalities scheduled to have a local fee higher than $30 by August 2025. State Statutes require vehicle registration fee to be flat, and not scale by vehicle weight or value (as some states allow).

Implement a Transportation Utility
Within the past five-to-ten years, the concept of a transportation utility funded by an annual fee (similar in concept to the City's sewer maintenance fund, which is funded by sewer and stormwater fees collected on the quarterly municipal services bill) gained some limited popularity in the State of Wisconsin. The core of the concept is similar to the wheel tax, but could be structured more broadly to recognize that there are many users of a municipality's transportation assets and services that do not pay a vehicle registration fee that is assessed based on the primary storage location of the vehicle. Legal challenges to some of the initial transportation utility fees adopted by some municipalities were successful, limiting how a transportation utility can be structured and still comply with existing State Statutes. Any pursuit of creating a transportation utility or setting up a transportation utility fee should be further discussed with and reviewed by the City Attorneys Office.

Other Options
In addition to the approaches described above, the City could advocate for other changes in State law that would provide more revenue for local and collector streets or provide the City with more flexibility to implement additional locally-generated revenue sources to address this capital need. Changes in Federal law could also be pursued to provide more direct transportation funding to municipalities and make a broader group of street types eligible for existing Federal transportation funds.

Non-Fiscal Limitations

Although the potential for a significant increase in funding for local paving seems slight in the current context, there are other limitations on the City's ability to quickly address the issue. The additional issues described below would likely best be addressed through a gradual, regular increase in the size of the City's local paving program, should a funding source be identified that could sustain an attempt to address the backlog of paving needs over the course of a decade or similar.

Staffing Capacity
In a hypothetical scenario in which local paving investment increased from approximately $15 to $20 million annually to $70 to $80 million annually, the Department of Public Works would need to increase staffing levels to deliver the expanded paving program. Each of our local paving projects requires site surveying and engineering design, for which the Department's local paving engineering group is currently staffed with six engineers and thirteen engineering technicians. Although it wouldn't be expected to be a direct relationship, an assumption of a tripling of those staffing levels to accomplish four times as much work is not unreasonable. Even in a scenario in which much of the additional design work is consulted out to private engineering firms, additional City staff would need to be hired to supervise the private firm's work and manage the administrative tasks of getting the project to construction. Utilizing consulting engineers would also increase costs beyond what was estimated earlier in this memorandum.

Once design is complete, additional City staff would be needed in the Department's Construction group to manage and inspect the additional paving projects. There may be decreases in staffing needs in Street Maintenance, as the overall improvement in the City's street network may reduce the demand for pothole repair. However, potholes would continue to occur, and the savings from decreased base level staffing and overtime in Street Maintenance would not make up for the additional costs of the needed design and construction staff.

Impact on Public and Private Utilities
Depending on the utility, it is typical and sometimes absolutely necessary for some types of work (replacing lead service laterals, adjusting storm sewers, replacing impacted segments of street lighting cabling, relaying aging gas mains and services, etc.) to occur during or before paving projects. The costs of this work are generally not included in the local paving program budget, and would also need to be considered if a significant increase in the pace of paving work was to occur.

Contractor Capacity
As with staffing capacity, a significant increase in the size of the annual local paving program would need to attract additional contractors to do work in the City to succeed. Department staff don't have any reason to believe that current City contractors have reached a limit of what they can accomplish with their current equipment and staffing levels, but its reasonable to assume that a program that is four times the size of a typical recent year would face increasing costs due to less competitive bids and an eventual lack of an ability for contractors to complete the work.

Next Steps

The Department of Public Works continues to focus on delivering a safe and high-quality street network to the City of Milwaukee residents, businesses, and visitors. We will continue to work collaboratively with other Departments and the Council to identify and pursue opportunities to work more efficiently and provide innovative roadway designs that improve safety, working within the fiscal resources that are available to the City for its myriad of significant capital needs.