



# Capital Improvements Plan/PMP/Assessment Policy

Baxter City Council Workshop

October 15, 2024

# Overview

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- Street & Utility Projects
- Plan Implementation

# Pavement Management Plan Objectives

- Preserve and perpetuate street pavements in a fiscally responsible manner.
- Correct pavement deficiencies and slow the rate of pavement deterioration.
- Consider immediate and long-term needs of existing local street pavements.
- Coordinate pavement maintenance and rehabilitation with utility repairs and redevelopment efforts.
- Provide information for better informed and involved decision making.

The goal of the program is to provide the right improvement at the right time to be most fiscally responsible to our residents and businesses.

# Pavement Management Plan History

- Developed in 2013
- Utilizes the PASER Rating System
  - The PASER methodology is based on a consistent numeric rating scale ranging from 10 for a newly surfaced street to 1 for a failed surface.
  - Preventive maintenance activities performed on streets with PASER ratings of 6 and higher; and rehabilitation activities performed on streets with PASER ratings of 6 and lower.
- Preventive Maintenance – Crack Filling, Patching, and Chip Seal
- Rehabilitation – Mill & Overlay, Full Depth Reclamation, Reconstruction

Pavement Rating Condition	Typical Recommended Management Strategy	
	Category	Strategy
9 - 10	Maintenance	Seal Coat
6 - 7 - 8	Maintenance	Crack Rout & Seal, Patching, Chip Seal
5 - 6	Rehabilitation	Mill & Overlay
3 - 4	Rehabilitation	Full Depth Reclamation & Paving
1 - 2	Rehabilitation	Reconstruction

# Pavement Management Plan History

- The PMP was initiated with Chip Sealing utilized as the pavement maintenance strategy and Rehabilitation projects primarily focused on commercial and industrial streets. From 2014 to 2017, 24.4 miles of city streets were chip sealed. In 2016 chip sealed pavements started to exhibit stripping which is the separating of the pavement surface creating potholes that over time extend vertically into the pavement surface. Below are photos of example of pavement stripping:



# Pavement Management Plan History

- In 2021 the City of Baxter Pavement Management Plan was updated to include Micro Surfacing as a pavement maintenance strategy in lieu of the chip seal program that was discontinued in 2017 due to pavement degradation due to pavement stripping.
- The Micro Surfacing Program utilizes an eight-year rotation or cycle. The age of pavements is utilized to determine the timing of maintenance and rehabilitation with the goal to follow rehabilitation activities with micro surfacing at year eight.
- An eight-year cycle was chosen based on preventive maintenance research which shows that roads, in good condition, should be micro surfaced within 7 to 10 years following rehabilitation or reconstruction.
- The Pavement Management Program utilizes the following Strategies:

Pavement Rating Condition	Typical Recommended Management Strategy	
	Category	Strategy
9 - 10	Maintenance	Crack Rout & Seal
6 - 7 - 8	Maintenance	Patching, Micro Surfacing
5 - 6	Rehabilitation	Mill & Overlay
3 - 4	Rehabilitation	Full Depth Reclamation & Paving
1 - 2	Rehabilitation	Reconstruction

# Micro Surfacing

- Micro surfacing consists of the application of a mixture of water, asphalt emulsion, aggregate (very small, crushed rock), and chemical additives. Polymer is commonly added to the asphalt emulsion to provide better mixture properties. The asphalt emulsion used in micro surfacing contains chemical additives which allow it to break without relying on the sun or heat for evaporation to occur. Thus, micro surfacing is an application that hardens quickly and can be opened to traffic in about an hour.



- Roadways selected for micro surfacing treatment are commonly those which have slight to moderate distress, no severe rutting, and generally narrow crack widths, and in which a micro surfacing treatment would help extend the pavement life until resurfacing becomes necessary.
- Micro surfacing is essentially a mobile batch plant.

# Pavement Management Plan History

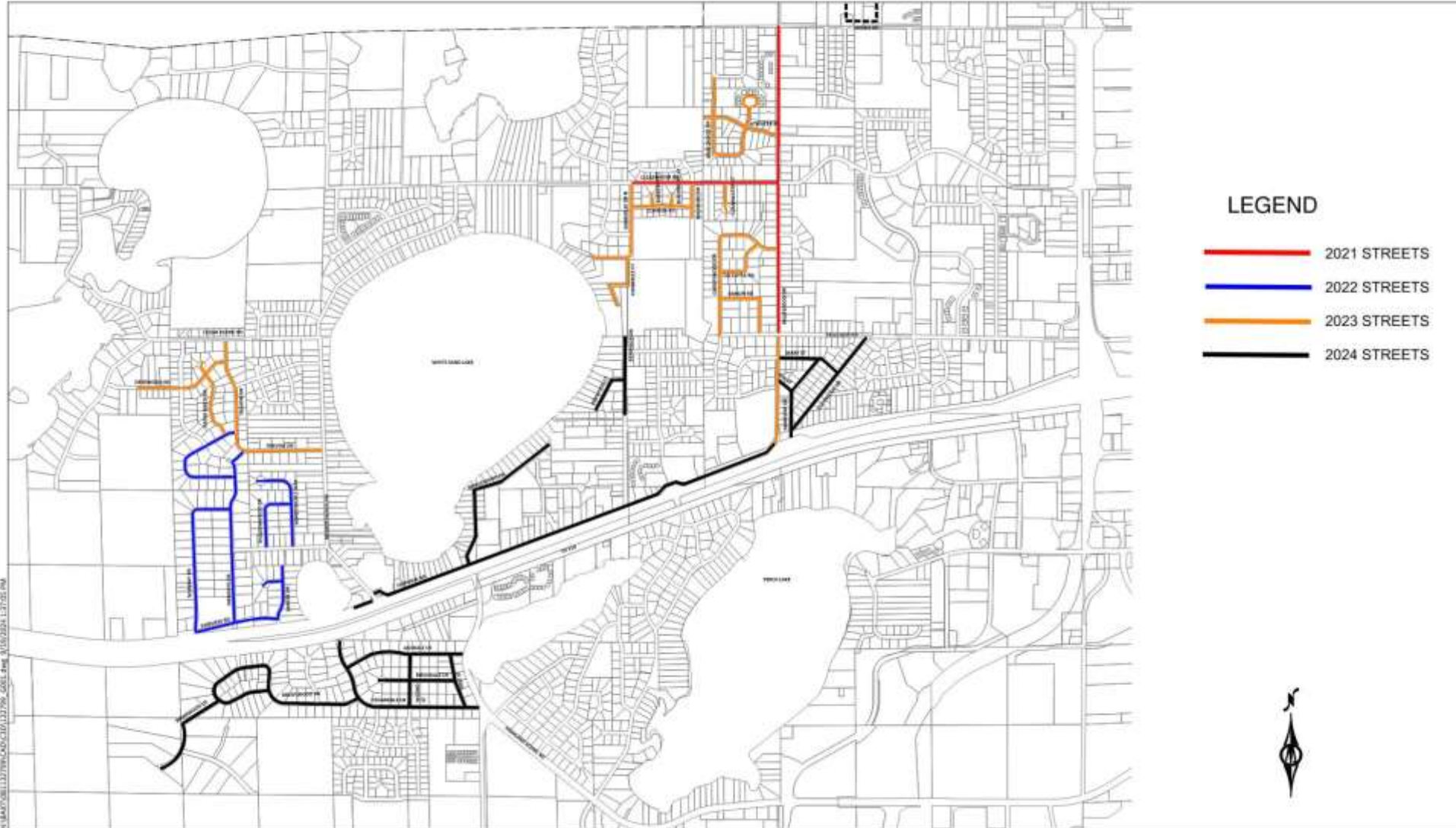
- In 2021, 1.5 miles were micro surfaced on Inglewood Drive from Excelsior Road to Woida Road and Clearwater Road from Kimberlee Drive to Inglewood Drive.
- In 2022, 3.6 miles of residential streets were micro surfaced in the neighborhood north of TH 210, west of Memorywood Drive, and south of Travine Drive.
- In 2023, 3.0 miles of streets were micro surfaced including Inglewood Drive from Fairview Road to Excelsior Road, Deerwood Road, Travine Drive, and Paper Birch Circle north of the 2022 project and residential streets west of Inglewood Drive and north of Excelsior Road.
  - A map of streets that have been micro surfaced is on the next slide.
  - The streets micro surfaced from 2021 to 2023 were chosen as test sections as the majority of them had not been chip sealed or rehabilitated since the inception of the pavement management program in 2014. The pavements were 17 to 19 years old and were in relatively good condition with PASER ratings of 6 and 7. Included in the 2023 project were Travine Drive, Atwater Road, and Jewelwood Drive which were chip sealed and exhibited a limited amount of stripping. These streets are being reviewed annually and are currently not exhibiting stripping showing through the micro surfacing.
- In 2024, 6.2 miles were micro surfaced in the Southdale neighborhood, Fairview Road from Memorywood Drive to Inglewood Drive, Maplewood Drive, and residential neighborhood east of Inglewood Drive, west of Glenwood Drive, and south of Excelsior Road. These streets are the first iteration of micro surfacing streets at year eight following rehabilitation and have PASER ratings of 7 and 8.



# Pavement Management Plan History

MICRO SURFACED STREETS  
CITY OF BAXTER, MN

OCTOBER 2024



# Pavement Management Plan History

## 2021 Micro Surfacing Project

- Pilot Project of Inglewood Drive & Clearwater Road that had PACER Ratings of 6 & 7 Respectively. The streets were 17 years old Collector Streets.

## 2022 Micro Surfacing Project

- Residential streets that were 18-19 years old with PACER Ratings of 6-7.

## 2023 Micro Surfacing Project

- Mostly residential streets with southern portion of Inglewood Drive (Collector Street). Residential streets 17-21 years old with PASER Ratings between 5-8 with the majority in the 7 range. Inglewood Drive segment was 8 years old with a PASER Rating between 6-8.

## 2024 Micro Surfacing Project

- Mostly residential streets with PASER Ratings between 7-9 with the majority being 9's. Street segments between 8-10 years old with the majority of the streets at 8 years.

# Pavement Management Plan History

## Street Rehabilitation Program

The goal of the program was to achieve a minimum pavement life of 20 years for commercial streets and 25 years for residential streets between rehabilitation. The City was divided into 7 Management areas of comparable size and divided along physical boundaries where possible. Rehabilitation and pavement maintenance activities have now been grouped by pavement age and area, with age weighted more heavily than location for pavement management.

The overall timing of improvements may appear to be out of balance and concentrated within a short period of time, however, it is important to remember the following:

- City growth in the late 1990's and early 2000's.
- Lack of street improvements due to the economy from 2008 to 2013.
- PMP initiated in 2014 and many rehabilitations and new street improvements completed since 2014.
- Pavement degradation from chip sealing and maintenance activities not completed from 2018 to 2020.
  - Chip sealed streets exhibiting degradation need to be rehabilitated (Mill and Overlay or Full Depth Reclamation).

# Plan Implementation

- The following is a summary of system wide PASER ratings completed every three years. The 2025 values are a projected value based reflecting rehabilitation and micro surfacing completed from 2022 to 2024.

PASER Rating Summary Table									
Street	Area	2013 Ave	2016 Ave	2019 Ave	2022 Ave	2025* Projected Ave			
<b>Residential Streets (Total Area = 859,103 Sq Yd)</b>									
Local Streets - Residential Only	1	6.76	6.36	6.84	6.53	7.16			
Local Streets - Residential Only	2	6.48	6.48	6.55	6.26	7.45			
Local Streets - Residential Only	3	6.36	6.73	7.11	6.69	7.20			
Local Streets - Residential Only	4	4.96	6.48	7.14	6.40	5.90			
Local Streets - Residential Only	5	6.35	6.22	6.02	6.50	7.03			
Local Streets - Residential Only	6	4.77	4.56	4.97	6.69	7.74			
Local Streets - Residential Only	7	6.16	6.97	7.05	6.55	7.64			
	Ave	6.05	6.25	6.47	6.53	7.22			
<b>Municipal State Aid Streets (Total Area = 421,477 Sq Yd)</b>									
MSA	1	5.88	4.85	10.00	10.00	9.00			
MSA	2	6.64	6.84	8.01	7.74	7.58			
MSA	3	5.07	7.77	9.25	8.18	8.07			
MSA	4	5.58	7.94	7.92	7.83	7.86			
MSA	5	4.94	4.99	8.43	9.47	8.56			
MSA	6	0.00	0.00	0.00	0.00	0.00			
MSA	7	5.46	4.90	4.29	3.44	9.57			
	Ave	5.46	6.83	8.25	8.09	8.16			
<b>Citywide</b>	<b>Ave</b>	<b>5.89</b>	<b>6.40</b>	<b>6.94</b>	<b>6.94</b>	<b>7.47</b>			

- PASER ratings reflect an initial increase due to the rehabilitation projects that began in 2014 and pavement stripping from chip sealing not being prevalent.
- Ratings remained steady particularly on residential streets from 2016 to 2022 as the chip seal program was discontinued and no maintenance projects completed from 2018 to 2020.
- The projected increase in rating for 2025 is reflective of rehabilitation projects continuing and micro surfacing projects being completed from 2021 to 2024.

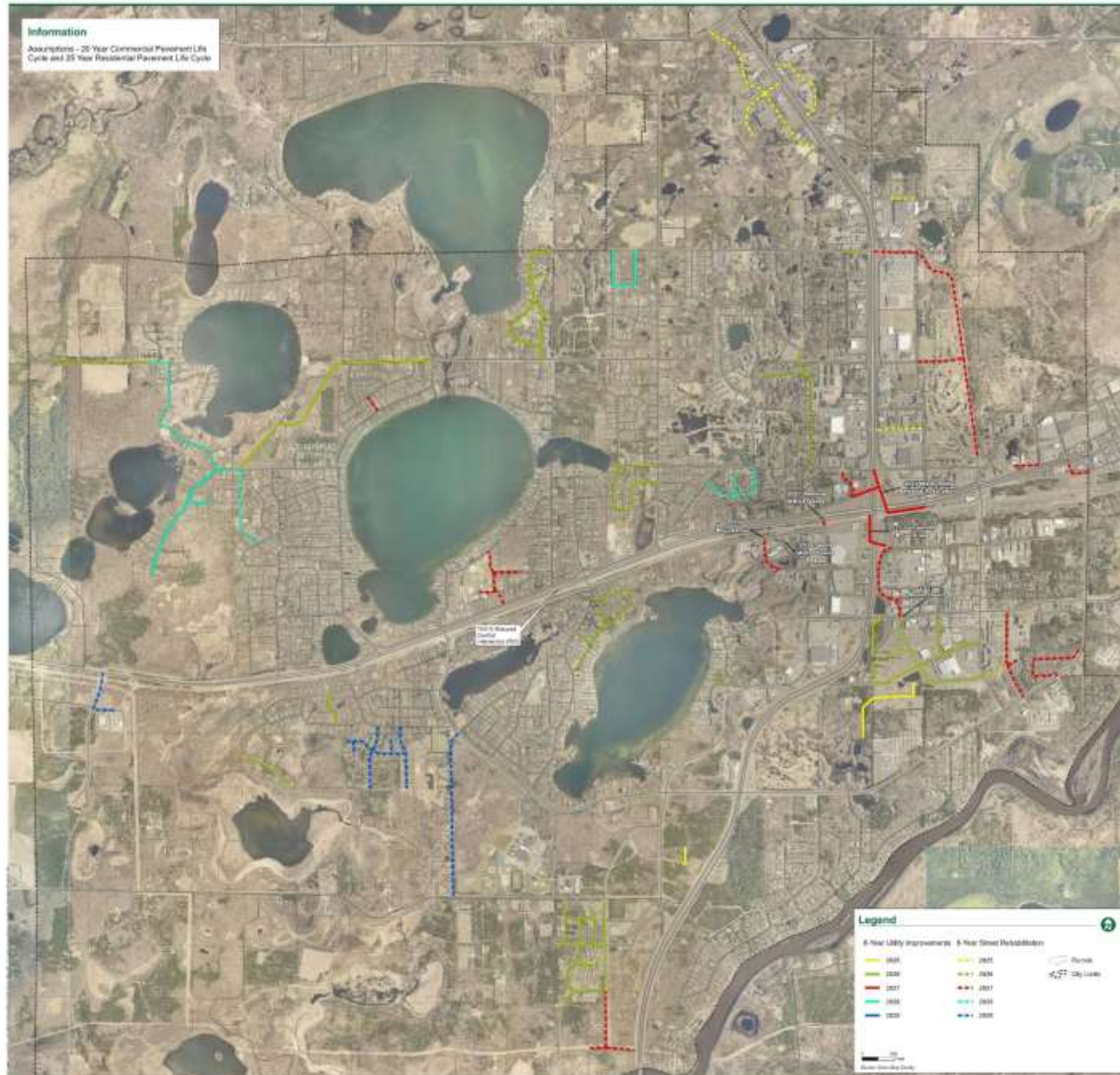
# Plan Implementation

- The next slide has a city-wide map identifying projects proposed to be completed from 2025 to 2029.
  - The proposed projects reflect street and utility projects, projects identified for 2027 in response to the TH 371 and TH 210 overpass project, and the PMP Rehabilitation Projects. Based on staff discussions the residential pavement rehabilitation projects (Mill and Overlay and Full Depth Reclamation) proposed for 2025 to 2029 earlier this year have been moved back a year to allow for this discussion and consideration of PMP revisions.
- The micro surfacing completed from 2021 to 2023 on streets with PASER ratings of 6 and 7 and pavement ages of 17 to 19 years appears to be performing well. While industry guidance is to micro surface pavements 7 to 10 years following rehabilitation (mill & overlay or full depth reclamation) it appears pavements, particularly in residential areas, are in a condition past year 10 that micro surfacing could be successfully applied.
  - Extending the placement of micro surfacing to year 12 following rehabilitation could further extend the pavement life and would further space out the amount of micro surfacing programmed each year.
- The current PMP and draft CIP have chip sealed streets exhibiting stripping to be rehabilitated (Mill and Overlay or Full Depth Reclamation) by 2029.
- With commercial streets scheduled to be rehabilitated every 20 years the PMP reflects rehabilitation in 2034 of the first commercial streets improved in 2014 as part of the pavement management program. Instead of mill and overlay at 20 years on the commercial streets and 25 years on the residential streets we are hopeful that micro surfacing extends the timeline closer to 25 years for commercial streets and 30 years on the residential streets.
- It is too early to know exactly how the micro surfacing will help so it is important to constantly monitor and document the street segments through the PASER rating system and annual inspections.

# DRAFT 2025 – 2029 CIP MAP\*

\*Street and Utility Projects are planned to be completed every other year. The proposed Street & Utility Project schedule in the Draft CIP is:

- 2026 – North Lyndale and Clearwater Road area, and Brentwood Circle (water only)
- 2028 – Jadewood and Jewelwood area and Olivewood Drive Area
- 2030 – Ashley Road, Welton Road, Baywood Road, Black Oak Road, and Springwood Drive
- 2032 – Eagle Ridge area



# Conclusions

Citywide average PASER Rating is one matrix to review the City's street system as a whole, however it is staff's recommendation that it should not be used for determining improvements or goals. The PMP should be used to guide the improvement that will provide the greatest value over the life of a street and should be reviewed on a per street basis. Below is generally how staff utilizes the PASER ratings following the current PMP:

## Commercial Streets

- Micro Surfacing at year 8.
- Mill & Overlay at a PASER Rating of a 6.
- Micro Surfacing at year 8 after Mill & Overlay.
- Reconstruction/FDR at a PASER Rating of 4. Maintenance requirements increase as PACER Ratings decrease, this is especially true in the commercial/industrial district with higher traffic counts and increased truck traffic.

## Residential Streets

- Micro Surfacing at year 8.
- Mill & Overlay at a PACER Rating of a 5.
- Micro Surfacing at year 8 after Mill & Overlay.
- Reconstruction/FDR at a PACER Rating of 3 or 4. Generally speaking, residents are more acceptable of extending the life of the road to save on assessments and are willing to drive on lower quality roads. There are situations where residential collector roads may want to be held to higher standards as they receive higher traffic volume.

# Conclusions

The PASER Rating system has been a valuable resource in the past, however completing the PASER Ratings every 3 years does not provide as much data as if the PASER Ratings were completed every 2 years. The 3-year rotation is scheduled to be completed in 2025, staff is recommending the following PASER Rating to be completed in 2027. The financial implication associated with implementing the 2-year rotation would be approximately \$7,500 per two years verses per three years. The PASER Ratings allow staff to better predict how streets of similar nature will age/wear to better predict future rehabilitation and provide more accurate updates to a Capital Improvement Plan.

The City has continued to follow the PMP as it relates to PASER Ratings and improvements, however the timeline associated with the improvements have been expedited or in certain situations, has resulted in bypassing a mill & overlay and going straight to an FDR. The backlog of pavement preservation is close to catching up, this was the first year 8-year-old roads were micro surfaced. There are still road segments that are planned for Micro Surfacing that are older than 8 years, but they are planned and if we stay the course will get completed over the next couple of years. Staff recommends to continuing to implement the current PMP and make adjustment/revisions based on results observed from micro surfacing.





**Thank You**  
**Any Questions?**