



HRGreen  
Building Communities  
Improving Lives.

# Pavement Management

Applying the *Right Treatment*  
to the *Right Pavement*  
at the *Right Time*

2025 Iowa Transportation Conference  
Caleb Jansen, PE

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## A Need for Better Infrastructure

- Roads in need of repair are more than just a nuisance; they cause wasted time, fuel, and are more dangerous for users.
- In Iowa, roads are currently graded at a B-, with 24% in poor-fair condition (39% nationwide)<sup>2</sup>
- Total U.S. funding gap of \$684 Billion over the next 10 years<sup>1</sup>

The 2025 Report Card for America's Infrastructure



<sup>1</sup> 2025 ASCE Report Card  
<sup>2</sup> 2023 Iowa ASCE Infrastructure Report Card



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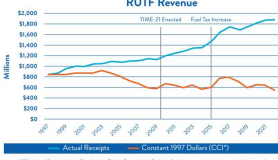
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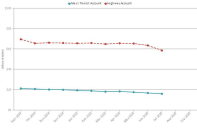
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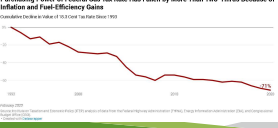
## Not Enough Money to Go Around?




2023 Iowa ASCE Infrastructure Report Card



Highway Trust Fund Balance, FHWA



Purchasing Power of Federal Gas Tax Rate Has Fallen by More Than Two-Thirds Because of Inflation and Fuel Efficiency Gains  
Source: ITEP, FHWA



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## Why Pavement Management?

- Cities face a long list of questions that need answered
  - What is the desired condition of our roadways?
  - How much will it cost to reach/maintain that condition level?
  - What would happen if we spend less?....more?
  - How do we get the most "bang for our buck"?



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## Why Pavement Management?

**A Pavement Management System can help provide answers**



Make *objective, data-driven decisions* for pavement maintenance, rehabilitation, and reconstruction.



Maximize the life of the pavements



Make the most efficient use of scarce public funds



Make a compelling argument to invest more in pavements



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## Modern Pavement Management

### Pavement Management is NOT:

- A specific project or one time plan
- A software program
- Just doing condition assessments
- Something that is done "for" you

### Pavement Management IS:

- A consistent activity
- A defensible way of prioritizing projects and resources
- Planning for what will be needed and how to pay for it
- A collaborative undertaking



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## Modern Pavement Management

- Pavement Management Plans are not one size fits all

Low Effort,  
Low Information

High Effort,  
High Information



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## Modern Pavement Management



- Every day more tools, data, and resources become available to help us plan, design, and build tomorrow's infrastructure and help us better maintain what we have today.



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## PM Process | Inventory + Assessment

- First Step: Inventory
  - This information likely already exists in City, County or State GIS Data sources
  - Location, Traffic, Functional Classification, Pavement Characteristics... etc.
- Second Step: Assessment
  - Pavement Conditions need to be observed and recorded



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## PM Process | Inventory + Assessment

### • Pavement Condition Index (PCI)

- Numerical Score from 0-100 based on observable pavement distresses
- Can be grouped into various condition categories, from "Very Poor" to "Very Good" pavement



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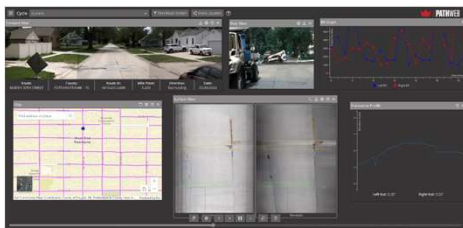
## PM Process | Inventory + Assessment

- Iowa Pavement Management Program (IPMP) provides data to all local jurisdictions in Iowa
- Statewide data collection started in 2013
- Data now provided at minimum once every four years



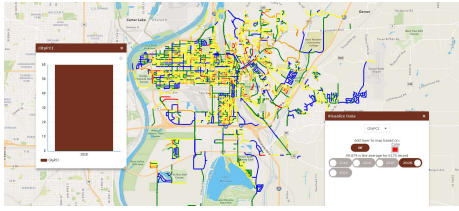
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## PM Process | Inventory + Assessment


<https://rams.iowadot.gov/pathweb/>


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## PM Process | Inventory + Assessment



<https://ipmp.ctre.iastate.edu/gisdata/>



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## PM Process | Inventory + Assessment

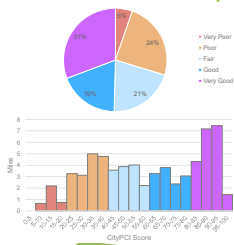
- Other Data Collection Options
  - Manual Field Collection (PASER, PSR, USACE, etc.)
  - Machine Learning Visual Collection
- Other Applications?
  - Sidewalk/Trail Assessments
  - Signage, Hydrant, Valve Box, etc. identification and inventory



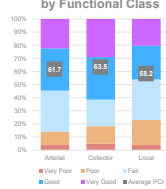
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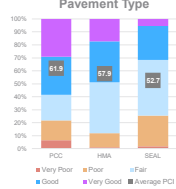
## PM Process | Inventory + Assessment



Condition Distribution by Functional Class



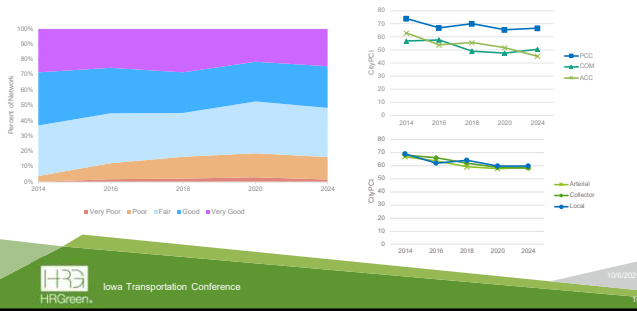
Condition Distribution by Pavement Type



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## PM Process | Inventory + Assessment




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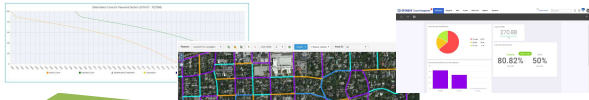
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## PM Process | Software Solutions

- Software can be used to analyze the entirety of a given street network through:
  - Performance Modeling and Scenarios
  - Projections based on desired performance and available funding
  - Prioritizing improvements
- dTIMS (IPMP Preferred), StreetSaver, Paver, and OpenGov (formerly Cartegraph) are all common




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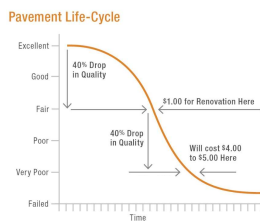
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## PM Process | Life-Cycle Modeling




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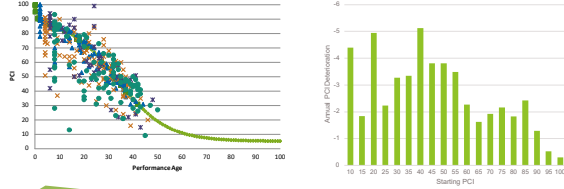
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## PM Process | Life-Cycle Modeling

- Most cities in Iowa now have access to 10+ years of continuous condition data

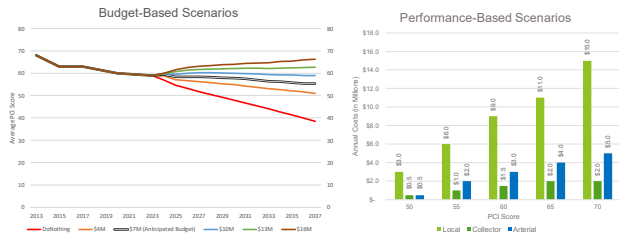


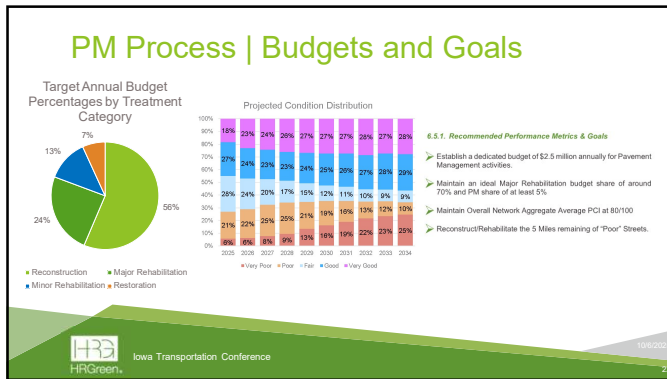
## PM Process | Treatments + Triggers

- What treatments are available, and on which streets can they be applied?
- How much do they cost, and what are the results of the treatments?

Category	Treatment	Description	Cost
Reconstruction	Reconstruction	The complete reconstruction of a roadway and all associated improvements. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$1000
Major Rehabilitation	Crack and Seal	Crack and seal with a hot bituminous material to prevent water from entering the pavement structure.	\$100
	Mill and Overlay	Remove the top 1.5 to 2 inches of pavement and replace it with a new surface. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$1500
	Crack and Seal Overlay	Remove the top 1.5 to 2 inches of pavement and replace it with a new surface. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$1000
	Major PCI Overlay	Remove the top 1.5 to 2 inches of pavement and replace it with a new surface. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$1000
Minor Rehabilitation	Thin Overlay	A "thin" overlay of new PCI pavement, typically 1.5 to 2 inches of material. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$100
	Minor PCI Overlay	A "thin" overlay of new PCI pavement, typically 1.5 to 2 inches of material. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$100
	Crack and Seal Overlay	Remove the top 1.5 to 2 inches of pavement and replace it with a new surface. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$100
Rehabilitation Alternatives	Surface Treatment	A surface treatment of new PCI pavement, typically 1.5 to 2 inches of material. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$100
	Crack and Seal Overlay	Remove the top 1.5 to 2 inches of pavement and replace it with a new surface. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$100
	Pavement Patching	Repair a small area of pavement that is damaged. This includes new PCI pavement, but also things like new drainage, lighting, and other improvements.	\$100

## PM Process | Budgets and Goals






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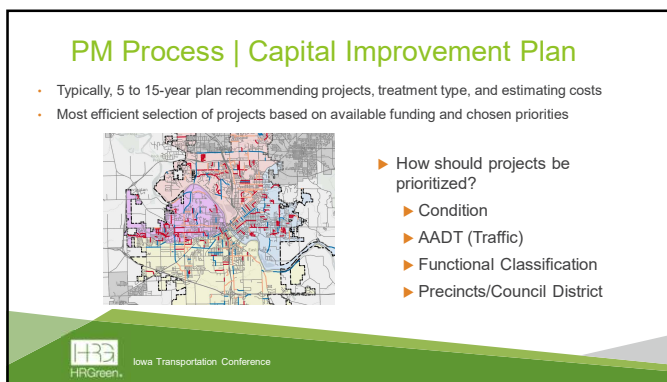
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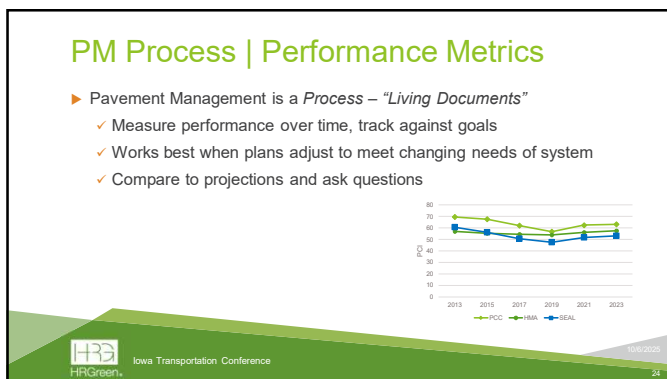
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## Conclusion

- Why should Cities invest pavement management?
- To make **objective, data-driven** decisions
- To maximize the life of the pavements
- To apply the **right treatment** to the **right pavement** at the **right time**
- To make the best use of scarce public funds
- To make a compelling argument to invest in infrastructure



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Building Communities  
Sustaining Futures



Caleb Jansen, PE  
Project Engineer

## Thank you!

Email: [cjansen@hrgreen.com](mailto:cjansen@hrgreen.com)  
Direct: 319-841-4351

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