

SYSTEMS PRESERVATION GUIDE

A Planning Process for Local Government Management
of Transportation Networks

Minnesota Department of Transportation

Local Road Research Board



Study Purpose and Goals

1. Analyze existing road conditions
2. Comparison of funding versus road conditions
3. Make new tools available
 - Analysis and planning
 - Communications
4. Develop customized solutions for future needs
5. Promote awareness of best practices

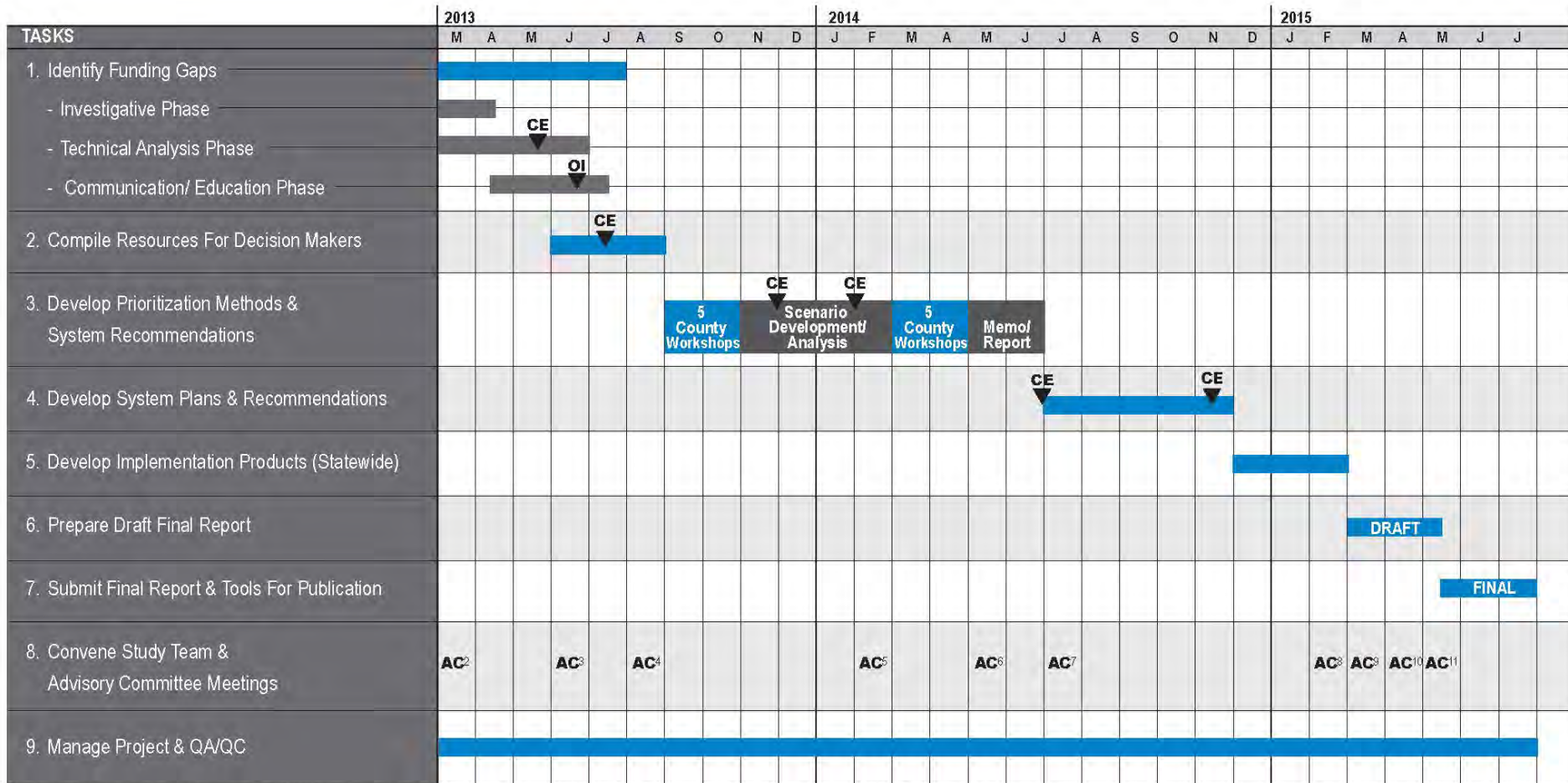
Study Sponsorship & Participation

Project Partners

- LRRB
- MnDOT
- SRF



Project Schedule



STAKEHOLDER PROCESS: **AC** Advisory Committee Meetings **CE** Individual County Engineer Meetings **OI** On-Site Interviews

Our Transportation System (Otter Tail Example)

Miles of Asphalt Roads = 1,062

County State Highways = 927 *

County Roads = 135

Number of Vehicle Bridges = 75

Functionally Obsolete = 0

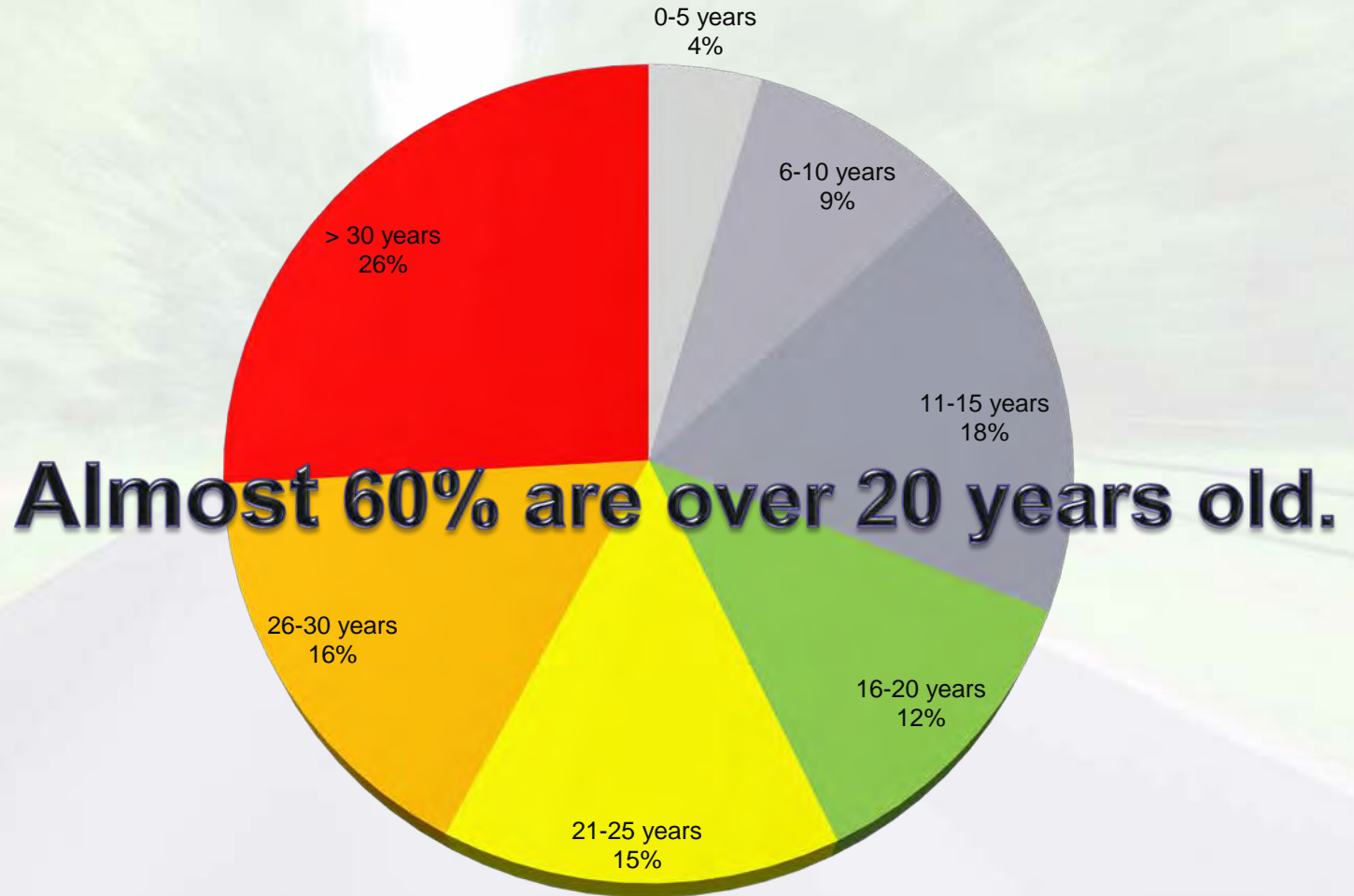
Structurally Deficient = 9

Adequate = 66



* Change caused by TH 235 Turnback (12-2-13) – 10 miles

Existing Road Age (Asphalt)



Creation of “Sketch Tool”

- Purpose:
 - Analyze current and future road needs
 - Analyze current and future funding sources
 - Free, easy to use
 - Built-in flexibility for customization
- Data sources:
 - County road system characteristics
 - County maintenance activities and costs
 - Comparative industry practices

Sketch Tool

		CSAH							
		Industry	Current	Gap* (Industry vs Current)	Gap* (Industry vs Current)				
					1	5	10	15	20
Maintenance Standards	Ave. Cost/Mile (per county)	Miles/Yr	Miles/Yr	Miles/Yr	Years	Years	Years	Years	Years
Combined Overlay Program					\$0	\$0	\$0	\$0	\$0
Overlay	\$190,000.00	18.3	4.4	14.0	\$2,654,496	\$14,667,765	\$33,387,962	\$57,280,205	\$87,773,435
Mill and overlay	\$190,000.00	18.3	4.4	14.0	\$2,654,496	\$14,667,765	\$33,387,962	\$57,280,205	\$87,773,435
Reclaim and overlay	\$190,000.00	18.3	4.4	14.0	\$2,654,496	\$14,667,765	\$33,387,962	\$57,280,205	\$87,773,435
Seal coating	\$17,700.00	130.9	25.1	105.8	\$1,873,059	\$10,349,836	\$23,559,140	\$40,417,931	\$61,934,496
Crack seal/crack filling	\$1,600.00	305.5	0.0	305.5	\$488,832	\$2,701,105	\$6,148,476	\$10,548,292	\$16,163,696
		Total CSAH =			\$ 10,325,379	\$ 57,054,235	\$ 129,871,503	\$ 222,806,840	\$ 341,418,497

* - If the gap is calculated as a negative number, the funding gap defaults to \$0 rather than a negative dollar amount

		County Road							
		Industry	Current	Gap* (Industry vs Current)	Gap* (Industry vs Current)				
					1	5	10	15	20
Maintenance Standards	Ave. Cost/Mile (per county)	Miles/Yr	Miles/Yr	Miles/Yr	Years	Years	Years	Years	Years
Combined Overlay Program				0.0	\$0	\$0	\$0	\$0	\$0
Overlay	\$190,000.00	2.7	0.6	2.1	\$389,532	\$2,152,412	\$4,899,495	\$8,405,546	\$12,880,255
Mill and overlay	\$190,000.00	2.7	0.6	2.1	\$389,532	\$2,152,412	\$4,899,495	\$8,405,546	\$12,880,255
Reclaim and overlay	\$190,000.00	2.7	0.6	2.1	\$389,532	\$2,152,412	\$4,899,495	\$8,405,546	\$12,880,255
Seal coating	\$17,700.00	19.2	3.7	15.5	\$274,861	\$1,518,780	\$3,457,171	\$5,931,103	\$9,088,537
Crack seal/crack filling	\$1,600.00	44.8	0.0	44.8	\$71,733	\$396,372	\$902,254	\$1,547,902	\$2,371,931
		TOTAL CR =			\$ 1,515,191	\$ 8,372,387	\$ 19,057,909	\$ 32,695,645	\$ 50,101,235

* - If the gap is calculated as a negative number, the funding gap defaults to \$0 rather than a negative dollar amount

Inflation Rate **5%** per year

Total CSAH + CR =	\$ 11,840,570	\$ 65,426,622	\$ 148,929,412	\$ 255,502,484	\$ 391,519,732
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GAP Analysis - Example

**Otter Tail County
Annual Roadway Need - \$15.2 million/yr.**

**Current Expenditure (2011)
\$3.4 million/yr.**

**Year 1 Funding Gap
\$11.8 million/yr.**

Note: This GAP Analysis is for pavement preservation and does not include reconstruction.

Potential Options to Address “Gap”

- Adopt New Planning Strategies
- Change Size of Road System
- Consider Different Sources of Revenue
- Consider New Maintenance Methods

Strategies

1. Interjurisdictional Transfers
2. Tiered Classification of County Roads
(Different Maintenance Standards and Schedules)
3. Unpave Low Volume Roads
4. Transportation Plan
5. Performance Measures/Standards
6. Project Prioritization
7. Revenue Enhancements
8. New Maintenance Techniques
9. Decision Making Tools for Resource Allocation

Selected Strategies

Selected System Preservation Strategies	Anoka	Stearns	Freeborn	Otter Tail	Dakota
Jurisdictional Transfers	✓				
Tiered Classification of County Roads			✓		
Unpave Low Volume Roads					
Transportation Plans					
Preservation Performance Measures		✓			
Project Prioritization	✓	✓	✓	✓	✓
Revenue Enhancements			*	*	
New Maintenance Techniques					
Decision Making Tools					
Public Outreach & Education Materials				✓	

* Occurring as a result of system preservation activities

Otter Tail County Approach

Public Outreach Activities

- January 8, 2014
Fergus Falls
- January 9, 2014
Pelican Rapids
- January 28, 2014
Perham
- January 30, 2014
Henning
- April 2014 Meetings
Same locations

Decision Points

- April 2014:
County considers input,
adopts new strategies
- Fall 2014
Begin new strategies



Otter Tail County Results

- **Opportunity to Educate Elected Leaders**
- **Opportunity to Educate Our Citizens**
- **Provided a Long Range Comprehensive Plan**
- **Provided a Framework for Exploring New Revenue**
- **Hired Staff for Pavement Preservation/Management and Transportation Plan Management**



Otter Tail County Results

Preparing the County's First Transportation Plan

- 25 Member Project Steering Committee
- Applying a Tiered System Approach
 - System Preservation Strategy #2
- Applying Project Prioritization
 - System Preservation Strategy #6



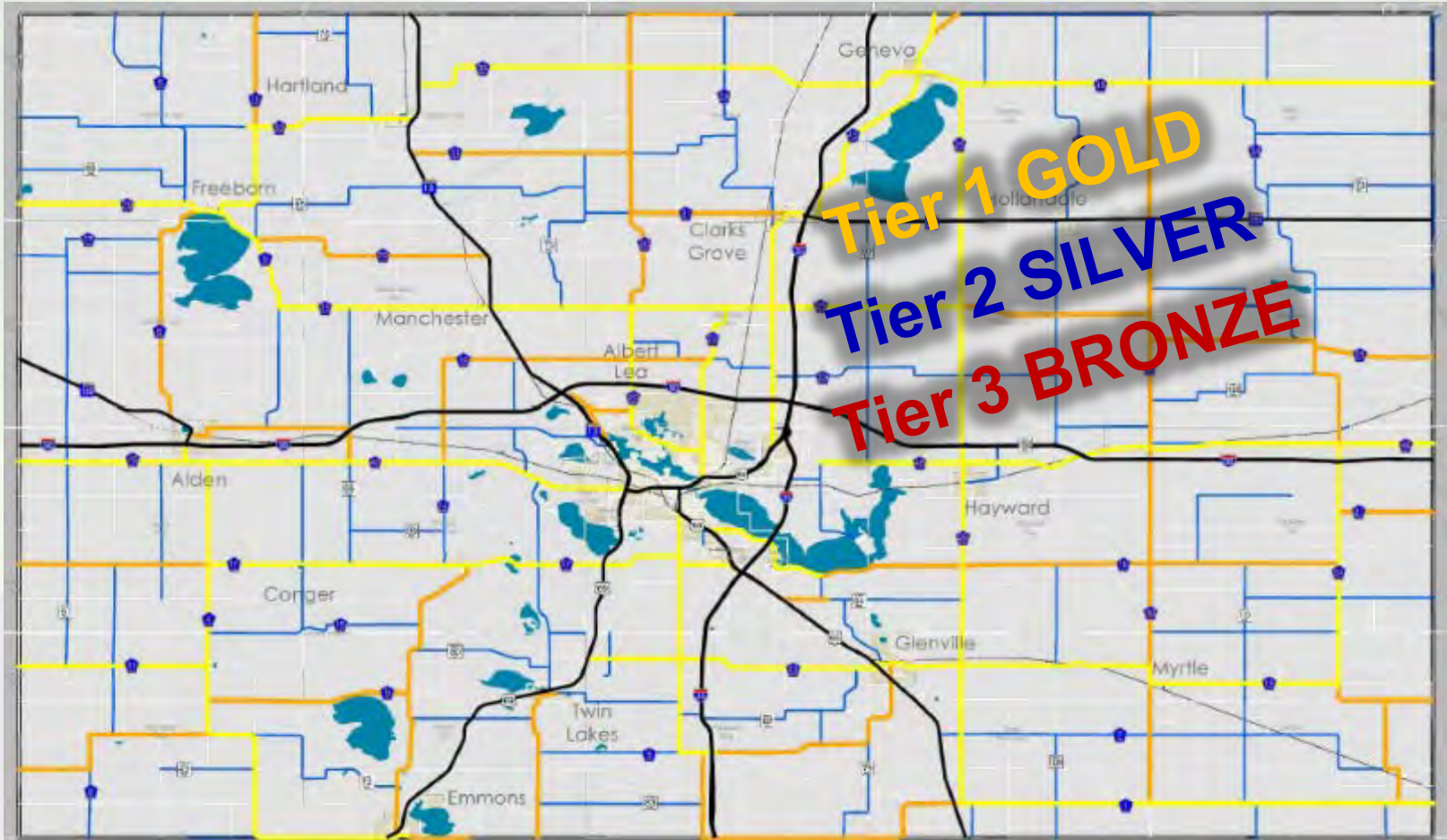
Lessons Learned



Otter Tail County

Freeborn County Results

- Developed a Tiered System Approach



Freeborn County Results

Tier 1 GOLD

- 1st Seal Coat: 0-4 years after any major repair
- Apply Major Repair before PCI reaches 65
- Overall Avg. PCI > 80 (current average is 82)

Tier 2 SILVER

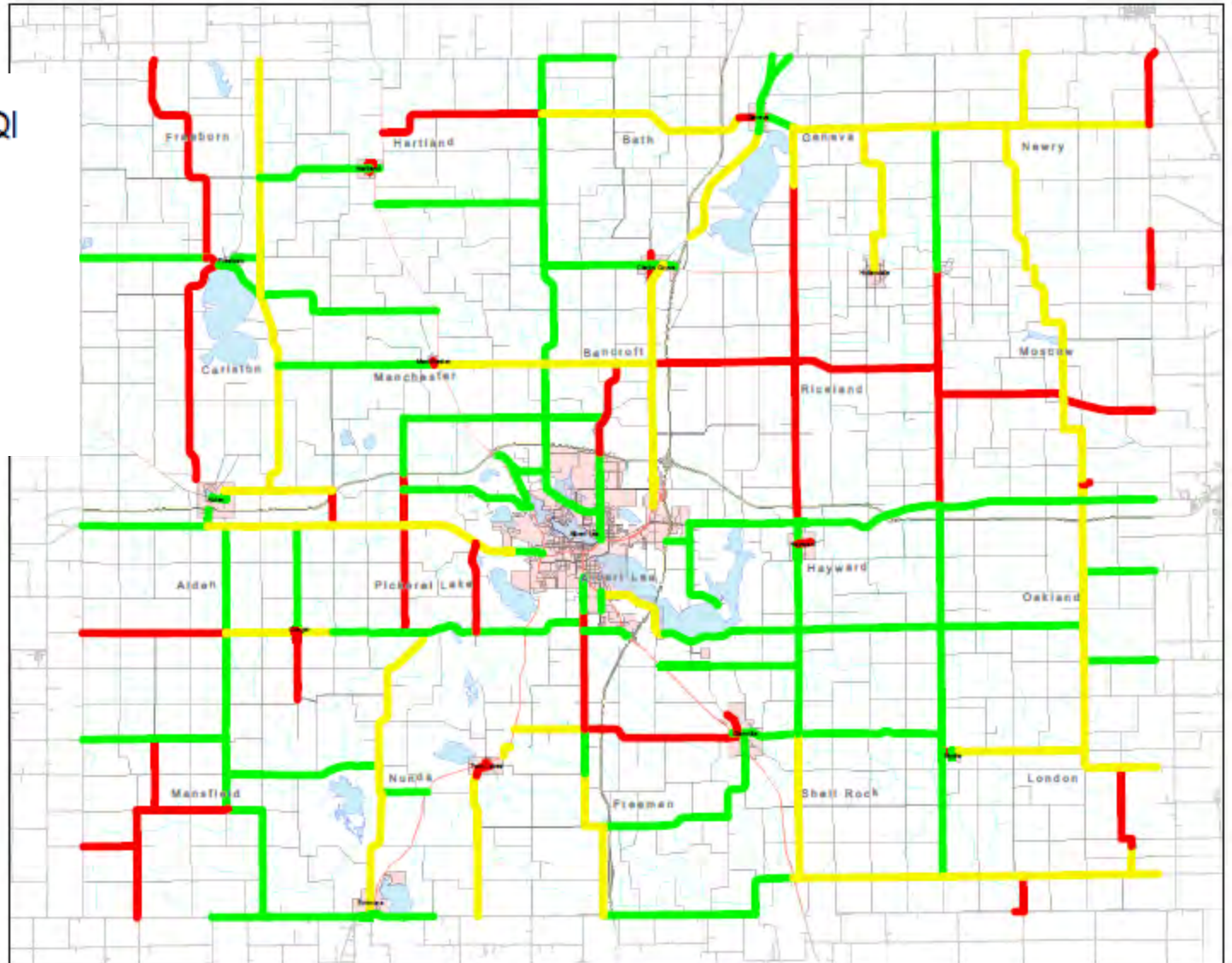
- 1st Seal Coat: 0-6 years after any major repair
- Apply Major Repair before PCI reaches 50
- Overall Avg. PCI > than 75 (current average is 80)

Tier 3 BRONZE

- 1st Seal Coat: 0-8 years after any major repair
- Apply Major Repair before PCI reaches 35
- Overall Avg. PCI > 70* (current average is 77)

Freeborn County Results

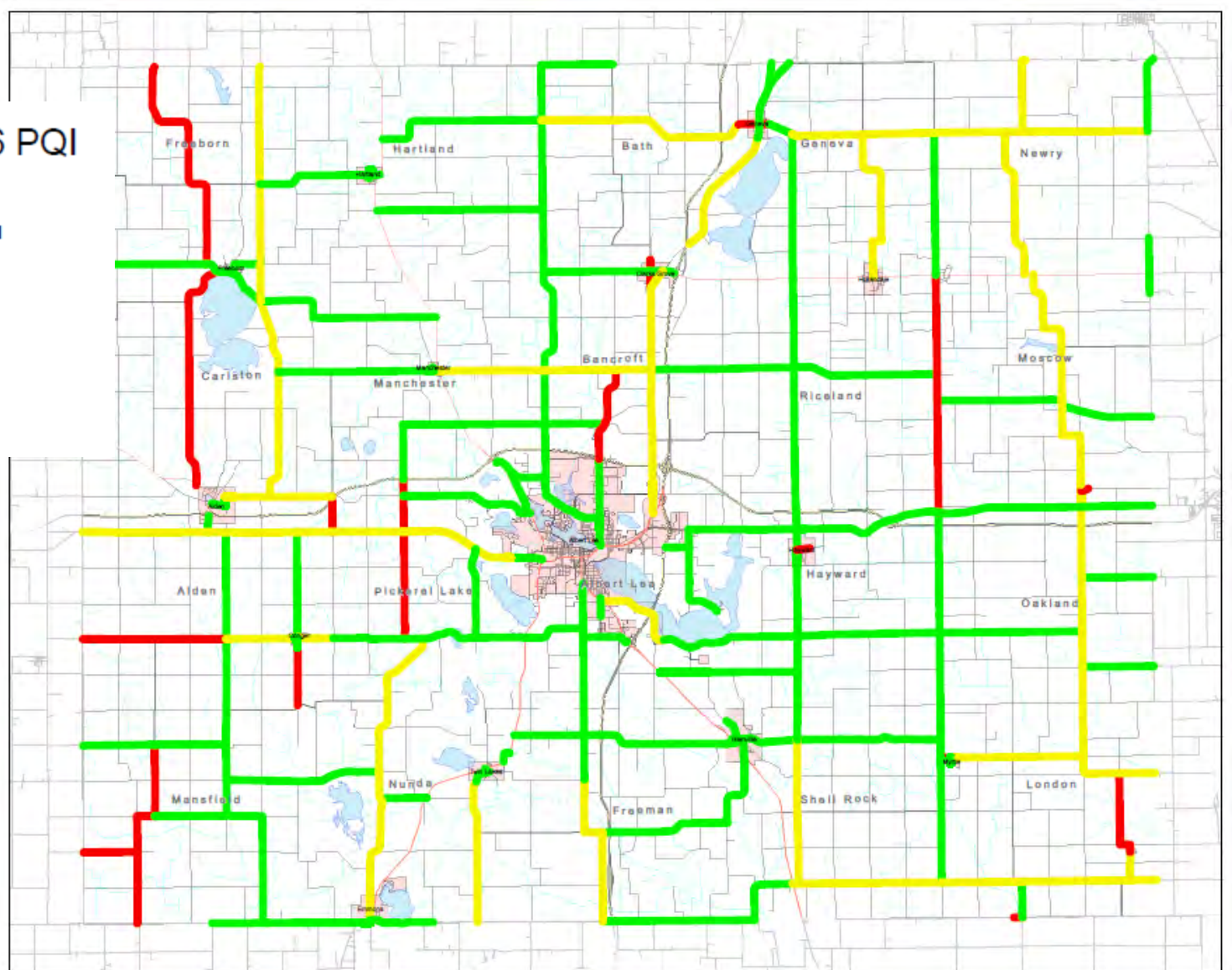
Projected 2026 PQI



Freeborn County Results

Projected 2026 PQI

With Tax 2026 PQI



Freeborn County Results

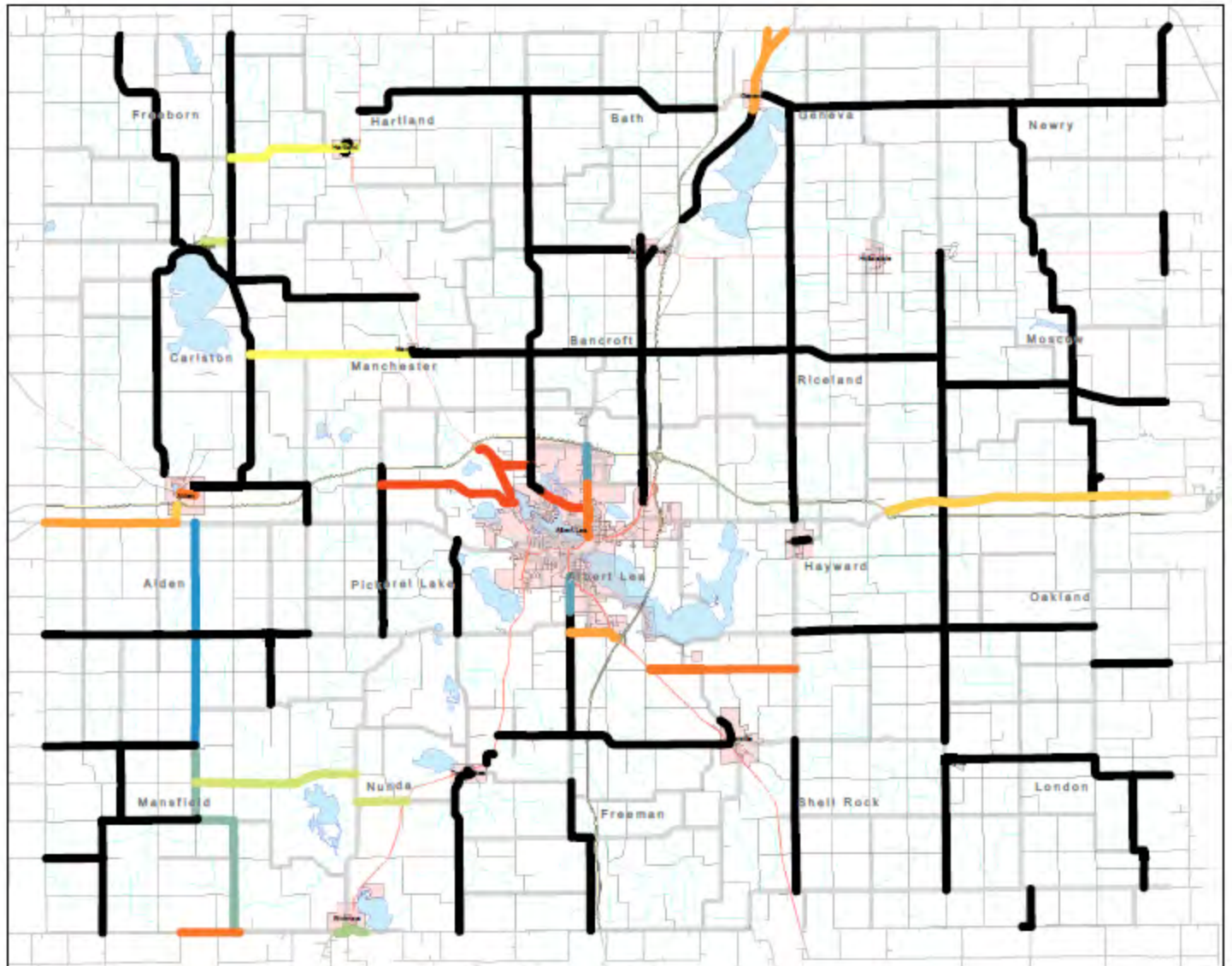
2016 to 2025 CIP Project Map

No Tax 2016 to 2025 CIP



2016 to 2025 estimated construction cost \$106M.
Estimated \$37M revenue.
\$69M Deficit.

Note:
Preventative Maintenance
not included.



Freeborn County Results

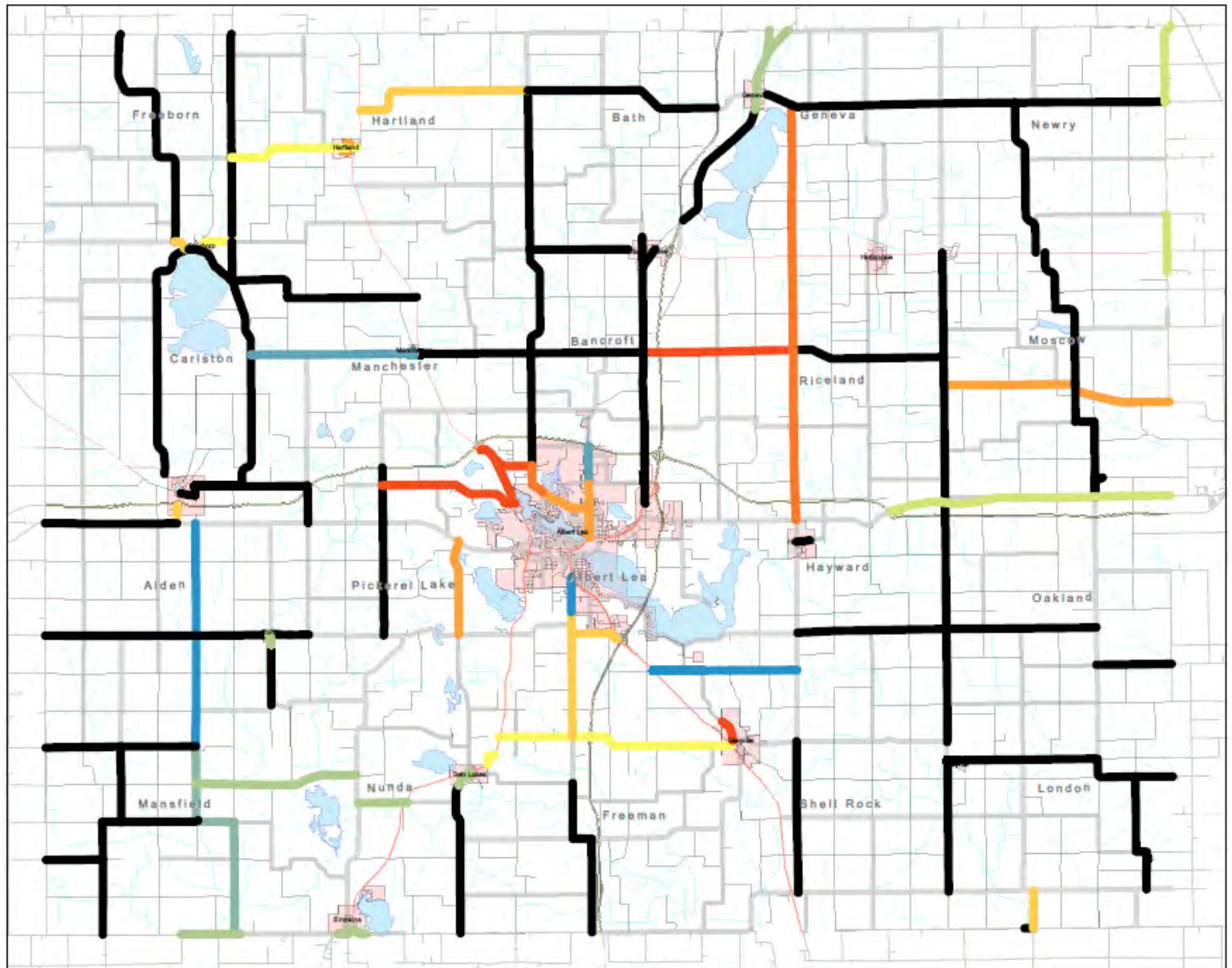
2016 to 2025 CIP Project Map

With Tax 2016 to 2025 CIP



2016 to 2025 estimated construction cost \$106M.
Estimated \$57M revenue.
\$49M Deficit.

Note:
Preventative Maintenance
not included.



Lessons Learned



Freeborn County

Feedback from Pilot Counties

Anoka, Freeborn, Otter Tail

- Project is going very well and has been the catalyst for us to begin the process of looking at our system in a long range vision framed by the question: “What do the citizens of Otter Tail County want our highway system to look like in 25 years?”
- This project allowed Anoka County to dig into a few areas of that had not previously been a priority: refining our jurisdictional transfer priorities and creating a more comprehensive project prioritization process...a dynamic tool we will continue to use.
- We now refer to this (Gap Analysis) as part of every CIP presentation to discuss the ever increasing gap in needed funding versus available revenue. It is the baseline for our Board of Commissioners on the state of the Freeborn County Highway System.

Completed Tasks

Tasks	Deliverables
1. Identify Funding Gap	<ul style="list-style-type: none">▪ Sketch Tool▪ Gap Analysis▪ State of the County Reports▪ Outreach & Marketing Materials
2. Compile Resources	<ul style="list-style-type: none">▪ Resource Guide (<i>primer of existing tools</i>)<ul style="list-style-type: none">– FWD, PCI Asset Management, Traffic data/ forecasting, MnDOT Needs, GIS, MnCMAT, Transportation Plans, NCHRP 688 Determining Highway Maintenance Costs, NCHRP 743 Communicating the Value of Preservation – A Playbook
3. Develop Prioritization Methods and System Recommendations	<ul style="list-style-type: none">▪ Strategy Resource User Guide▪ Ongoing
4. Develop System	<ul style="list-style-type: none">▪ Ongoing
5. Develop Implementation Products (Statewide)	<ul style="list-style-type: none">▪ In progress
6. Draft Report	<ul style="list-style-type: none">▪ In progress
7. Final Report	

Next Steps

- Continue working with pilot counties to employ their selected strategies
- Present findings from the selected system preservation strategies to county boards
- Develop system plans and recommendations
- Develop implementation products (statewide)
- Prepare final plan

System Preservation Guide

*A Planning Process for Local Government Management
of Transportation Networks*

Questions?