



**Ronnie Keeter, PE**

**Chief Engineer**

***Prioritizing Maintenance***

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Chief Engineer's Office Session



**Ronnie Keeter, PE | Halifax & Edgecombe CMEs**



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Chief Engineer's Office Session

# Prioritizing Maintenance

Chief Engineer's Office Support Staff

**Robert Barrier**

**Olivia Pilkington**

**Becca Gallas**

**Ben Chola**

**Kelsie Ballance**



**Chris Peoples, PE**

**Deputy Chief Engineer**

***Communications and Stakeholder Value***

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**Chief Engineer's Office Session**



Pause (k)

# Communications and Stakeholder Value

## Statewide Stakeholders



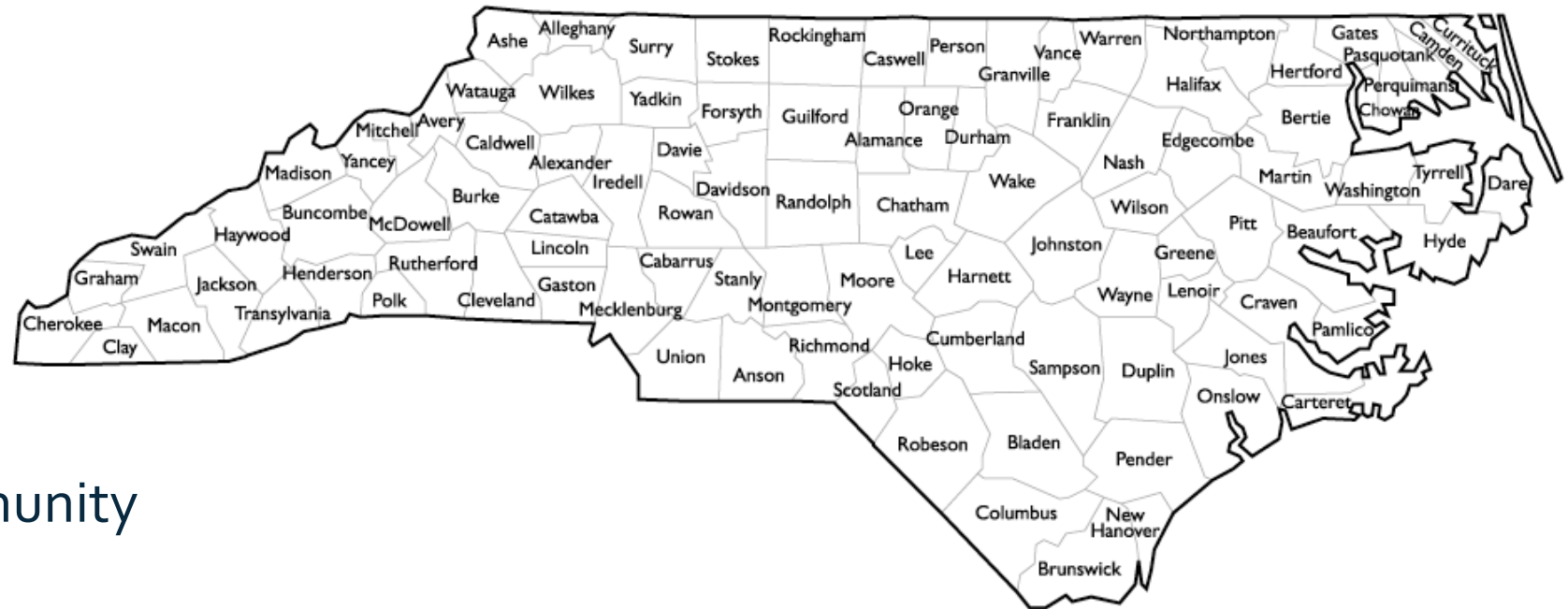


# Communications and Stakeholder Value

## Local Stakeholders

### Including:

- County Commissioners
- Mayors
- Municipal Officials
- Citizens
  
- Your staff – voice in community



Proactive, Informed Communication from all DOH (Division, Central)  
**Builds Trust**



# Communications and Stakeholder Value

## DOH Team Playbook

- Give Feedback to Division Management
  - Help us be better teammates
- Be Responsive
  - Asks from Central will keep coming
- Participate in initiatives
  - Build the future so we can streamline future Central asks



# Kristin Barnes, PE

## Interim Director of Highway Operations

### *Maintenance Road Map*

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Chief Engineer's Office Session

# Maintenance Road Map

Peer Benchmarking



**Indiana**  
Department of Transportation

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20-year, mapped  
life-cycle based maintenance plan

Plan fully, sustainably funded

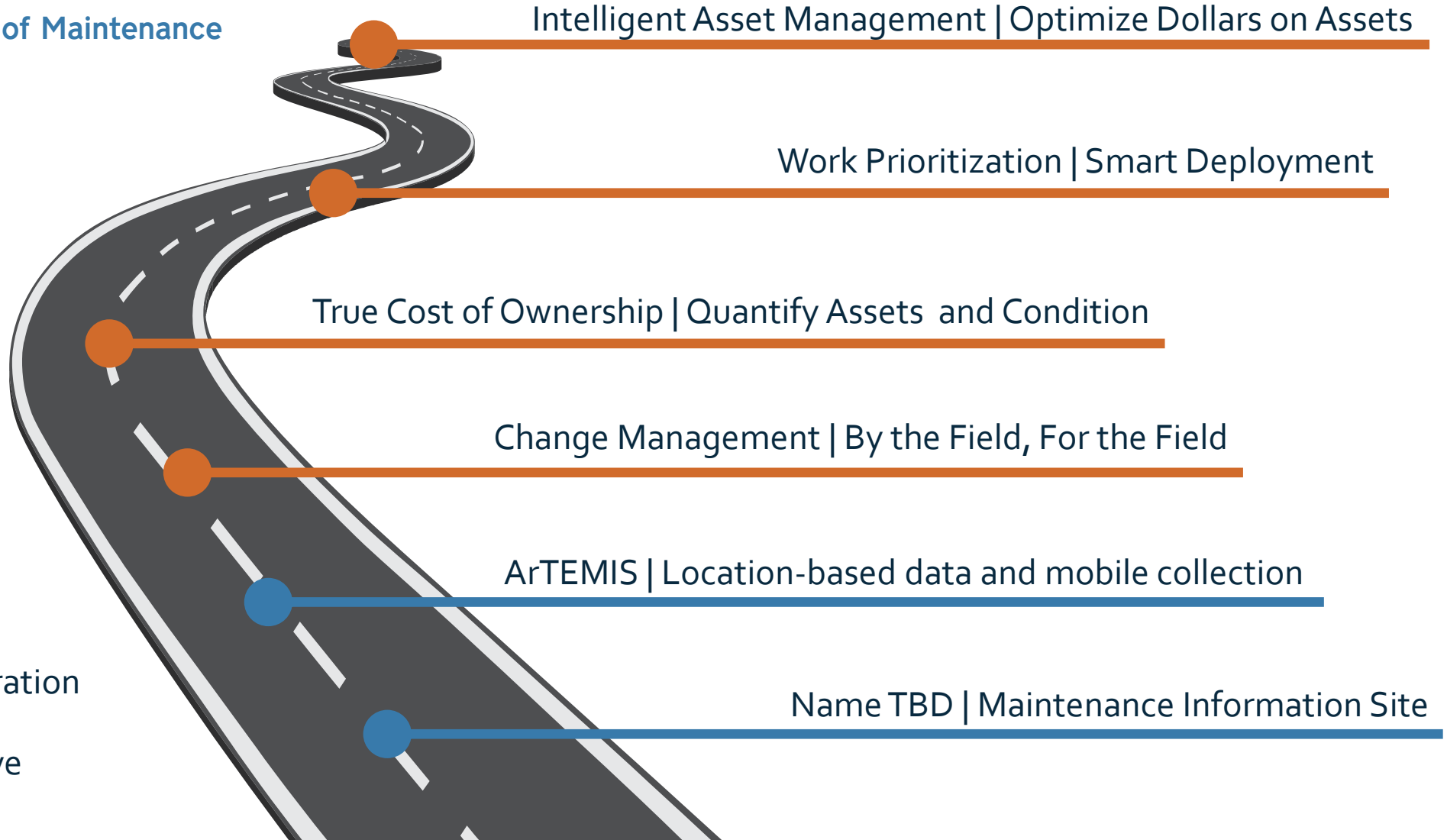


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Utilizes future technologies,  
including crowd-sourced data and  
artificial intelligence  
to prioritize and manage budget and  
workforce

# Maintenance Road Map

Planning the Future of Maintenance



Future Consideration

Existing Initiative

# Maintenance Road Map

Future Technologies and Concepts

## Machine Learning

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Project Bundling of  
Planned Work

Information Extraction  
from Imagery/LiDAR

Risk Identification

## Alt Data Capture

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Capture condition,  
inventory, contractor  
performance

via

Car Telematics

Crowd Sourced Imagery

## Data Governance

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Interconnectivity of data  
sources (breaking down  
data silos)

One source of truth-  
Informed messaging



# Chief Engineer's Office Q&A

<b>Ronnie Keeter</b>	<b>Chief Engineer</b>
<b>Chris Peoples</b>	<b>Deputy Chief Engineer</b>
<b>Greg Burns</b>	<b>Eastern Deputy Chief Engineer</b>
<b>Kristin Barnes</b>	<b>Interim Director of Field Operations</b>

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**Becca Gallas, PE**

**ArTEMIS Project Manager**

***ArTEMIS Maintenance Data***

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**Chief Engineer's Office Session**



# ArTEMIS

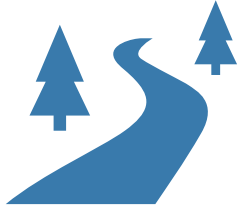


Advancing our Transportation Ecosystem through Maintenance Intelligence Solutions

**GOAL:** Route-based Work Accomplished and Cost  
on all maintenance work functions

# **The Department's Why**

## Maintenance Responsibilities



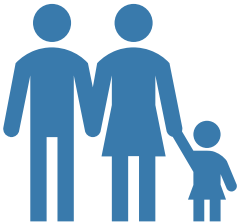
80,211 Miles of Roads



13,500 Bridges



367,930 Maintenance Pipe



10.49 Million People Served

# Visual Representation of Funding for Lawmakers and Auditors

## Maintenance Programs

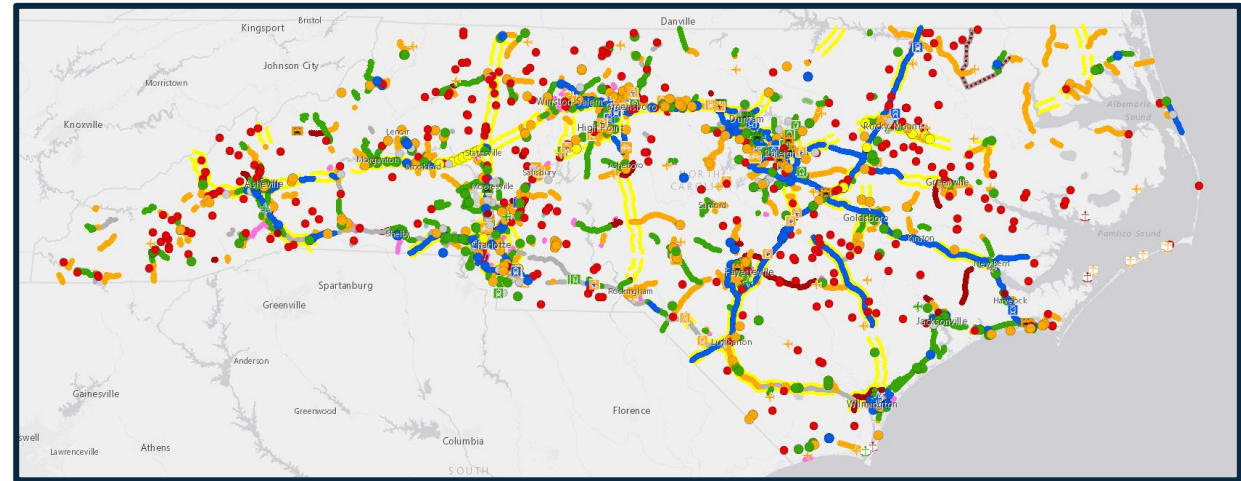
\$1.95 Billion FY2022  
(GMR, BPR, CR, PP, BP, RE)



Where was \$ performed?

## STI-funded Projects

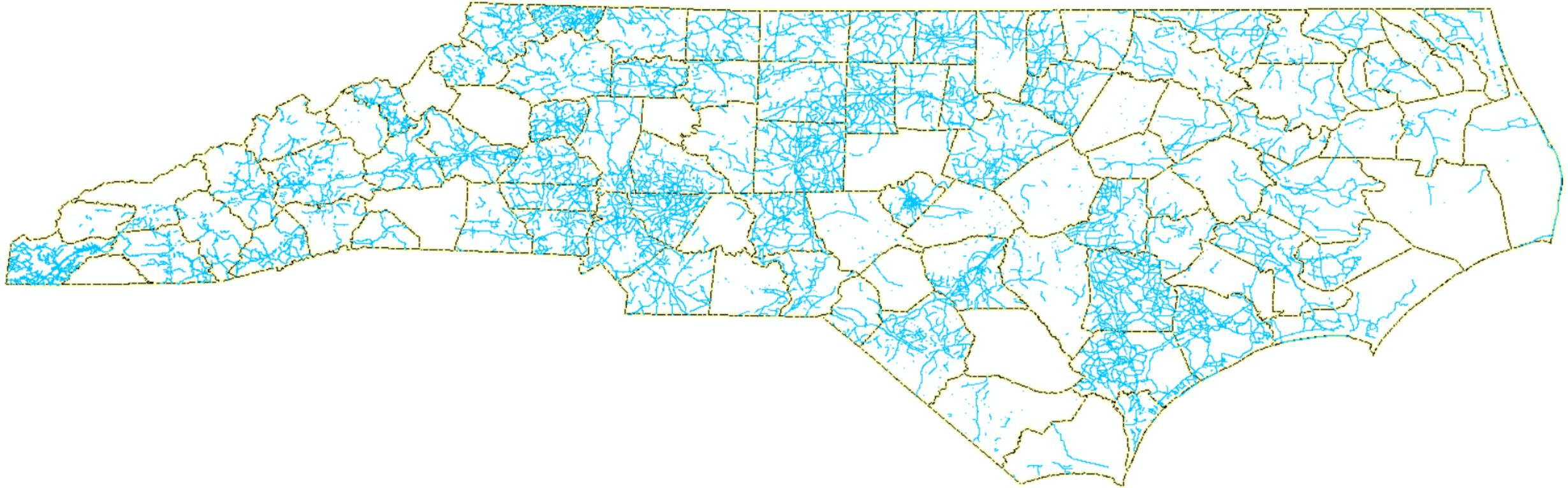
\$2.2 Billion



Clearly connects \$'s planned and performed to locations

# 3111 – Min Shoulder/Drainage Ditch Maintenance

Work Recorded November 15 2021- early February 2022



# The How

Statewide Initiative

# ArTEMIS

Work Streams

General Maintenance

Contract Resurfacing /  
Pavement Preservation

35 WF Tasking  
(Phase 0)

Work Manager:  
Mobile Data  
Collection

Resurfacing App  
Enhancements

HiCAMs/SharePoint  
Enhancements

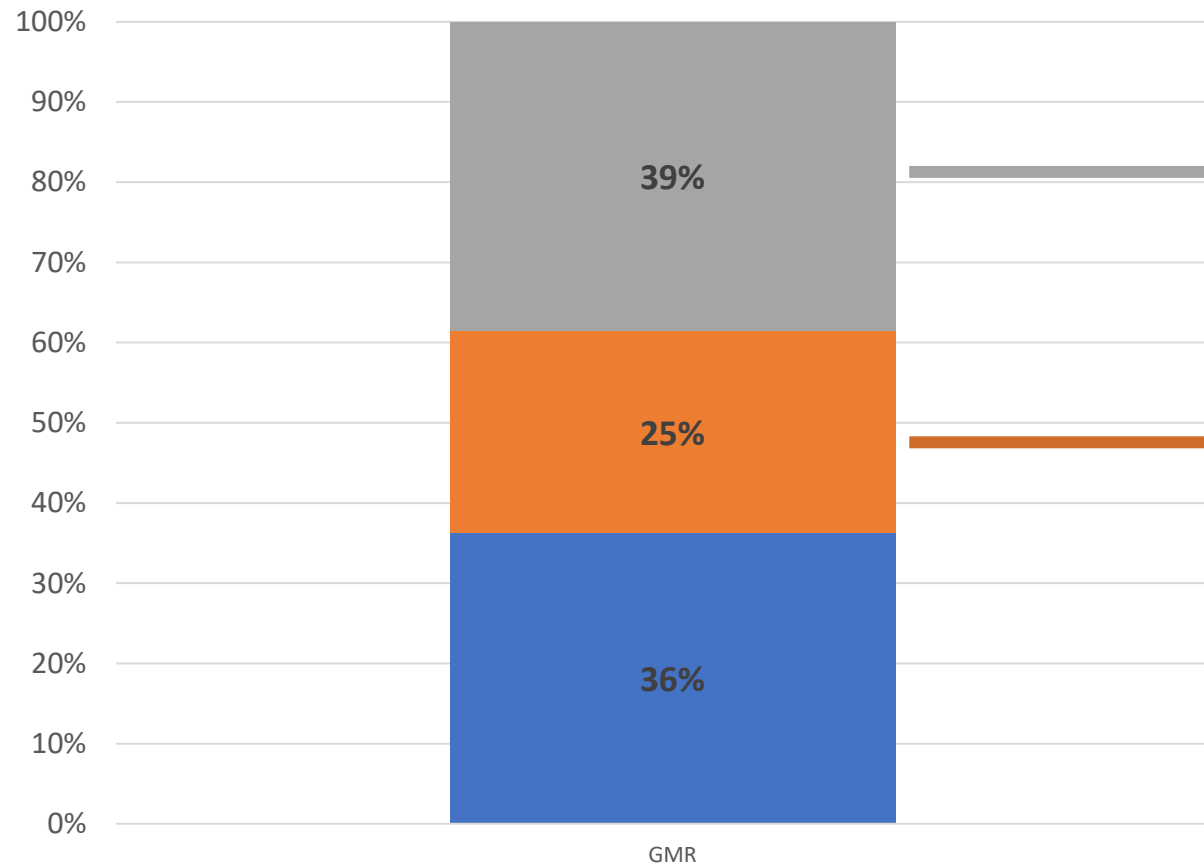
Component Projects

CARs Workflow

Work Function  
Review



# Progress towards Overall ArTEMIS Goal: GMR



■ ArTEMIS   
 ■ Admin/Misc   
 ■ Future Improvement  
 (Phase 0: 35 WF)

**Future Improvement – Top 3**

3102	REMOVAL OF HAZARDS/DEBRIS	5.59%
3236	TRAFF SIGNAL ROUTINE MAIN	2.44%
2815	POTHOLE PATCHING	2.42%

**Admin/Misc – Top 3**

6080	MISC SERV OR OPERATIONS	2.94%
2728	EXTERNAL CUSTOMER SERVICE	2.83%
9900	ADMINISTRATIVE FUNCTIONS	2.59%

# Mobile Data Collection

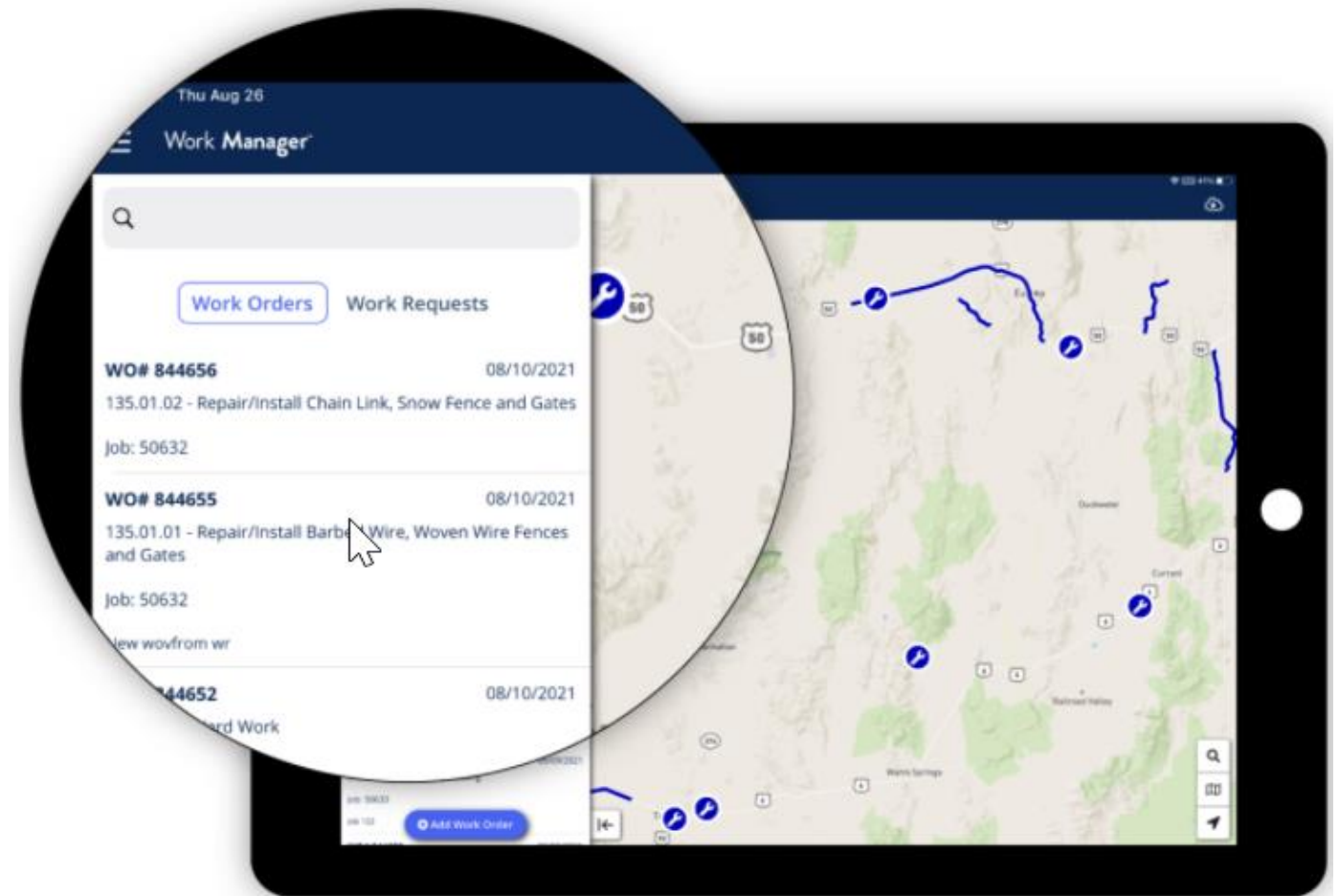
Operations including:

- Work Order creation
- Manage inventory

Business Requirements:

- Offline editing
- Usability, simple
- Share across units

Testing and Pilots – April 2022



# Citizen Action Requests (CARs) Process Improvement

## How Can We Help You?

### Report a Problem to NCDOT

-  [Potholes](#)
-  [Culvert Blockage](#)
-  [Drainage Issue](#)
-  [Guardrail Repair](#)
-  [Highway Debris](#)
-  [Malfunctioning Traffic Light](#)
-  [Missing or Damaged Signage](#)
-  [Shoulder Damage](#)
-  [Other NCDOT Issue or Question](#)

Connect Systems

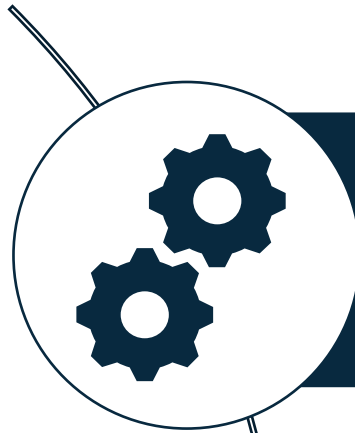
Automate Workflows



Asset Management  
System  
(AMS)

**Why does it matter to me?**

# Benefits to Maintenance Yards



## Work Efficiency

- Sequence and cluster work
- Identify risks and repeated maintenance issues



## Work Force

- Preserve retiring “local knowledge” into data that can be shared with new and central staff
- Tools to do job in field, not in office



## Funding

- Backlog of work- what could be delivered with additional funding
- Demonstrating transparency, accountability = additional funding opportunities

# Opportunities for Engagement

- Mobile Data Steering Group
  - “Building the Dream Tablet”
  - Pilot Reviews
- Pilots in identified offices
- Ongoing field surveys for building components

**Thank you!**

