MOTT MACDONALD

# Alachua County
# Pavement Management Program
# 2023 CIP Analysis

Determining the impact of weighting project selection to Areas of Inequity

January 17, 2023

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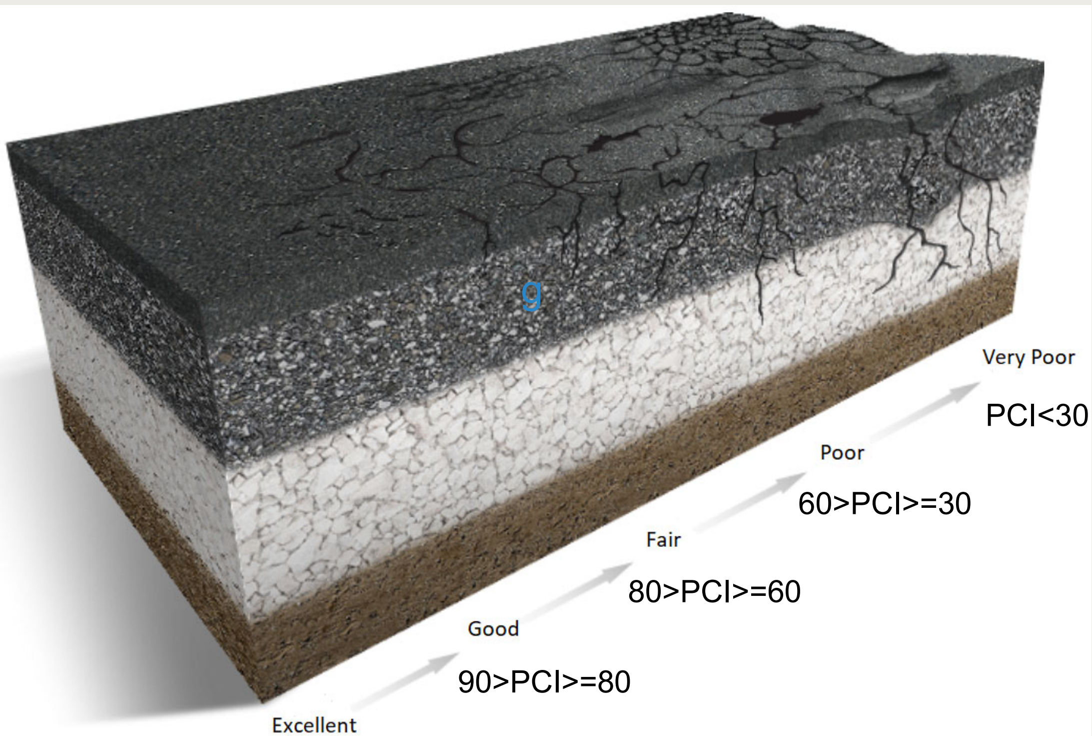
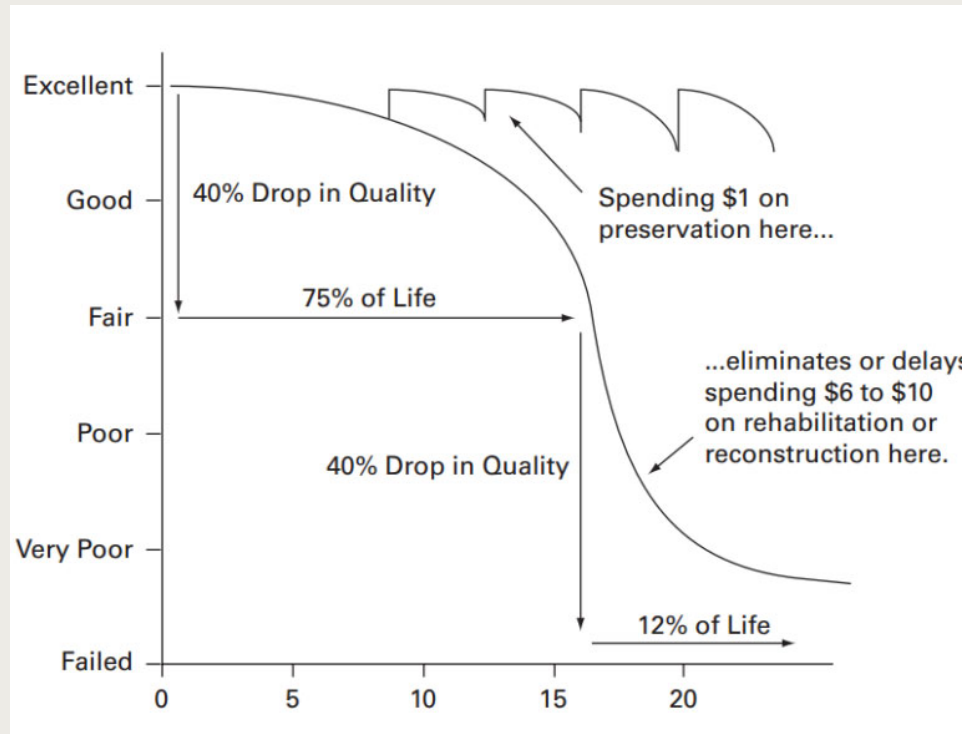
# Pavement Management Overview

January 17, 2023

# First, Some Pavement Management Background




100>PCI>=90



# Inequity Area Development

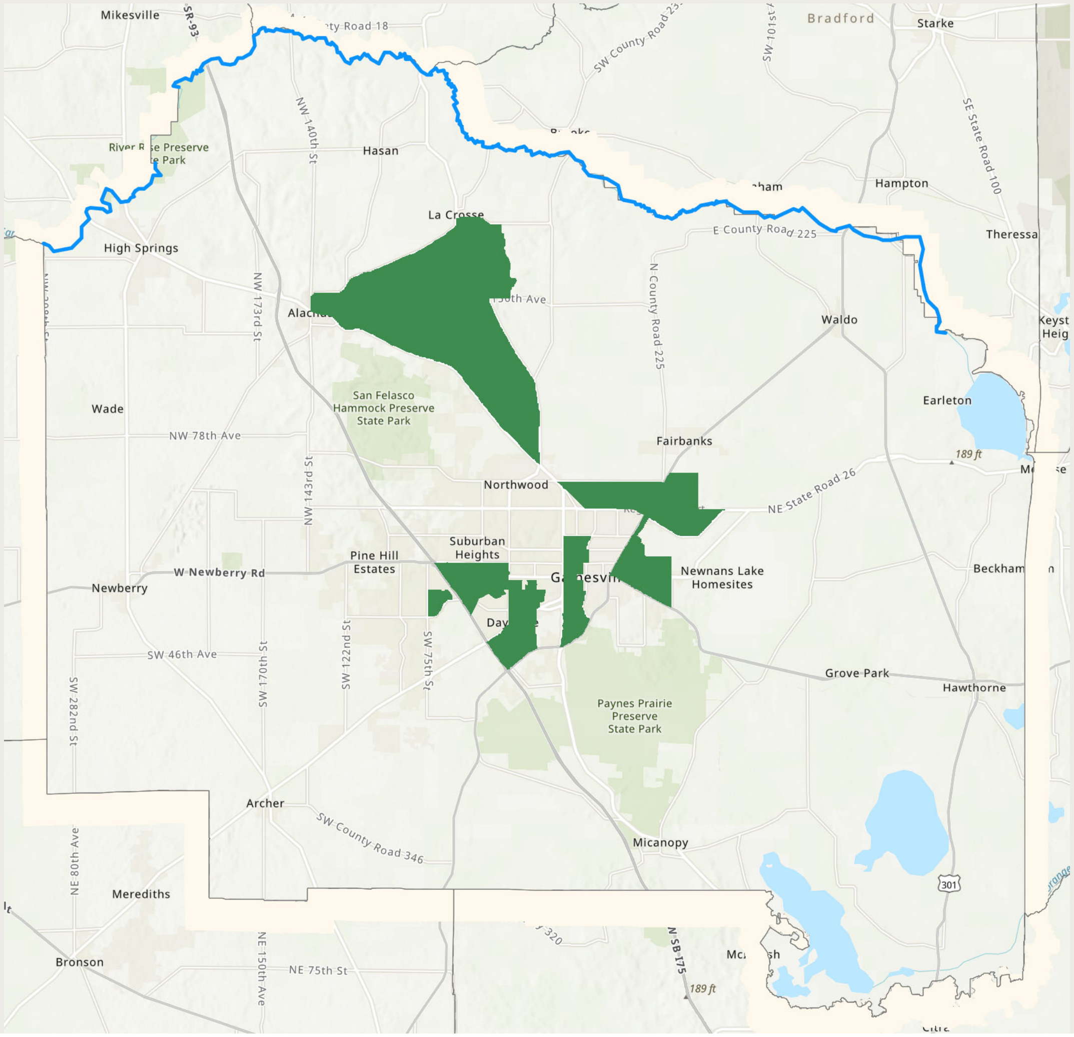
- **Board Direction to develop a metric to evaluate equity in the pavement management program**

- **Staff utilized three metrics to identify Inequity Areas:**
  - U.S. Housing and Urban Development Qualified Census Tracts
    - 50 percent of households with incomes below 60 percent of the Area Median Gross Income (AMGI) OR
    - have a poverty rate of 25 percent or more

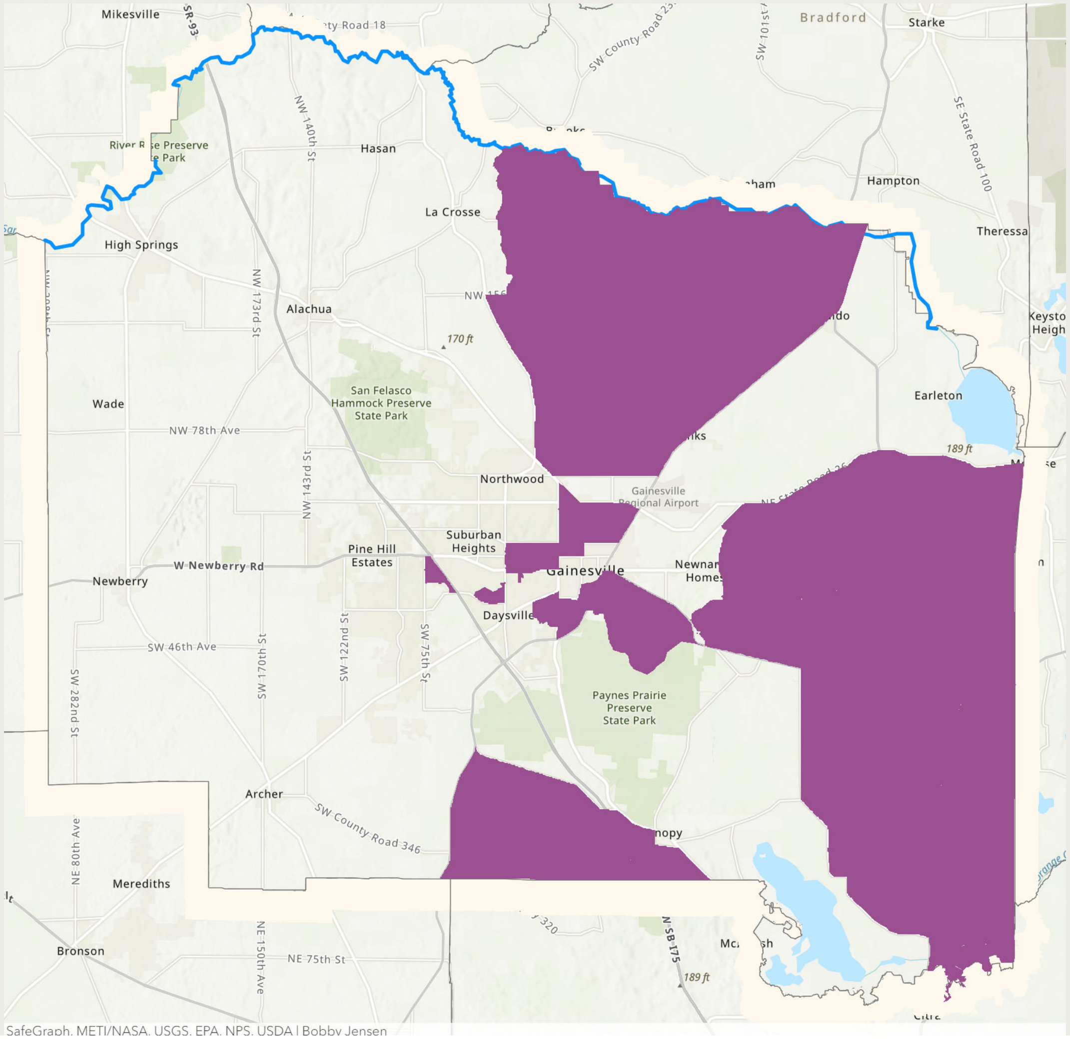
  - Census Tracts with Median Income <185% of Federal Poverty Guideline
  - Properties with residential improvement values in the bottom 20% of all values
    - Added a buffer of 1,320 ft.

- **Population in Inequity Area:**
  - 2020 Population is just less than 90,000, or about 1/3 of County Population
  - Includes both incorporated and unincorporated residents

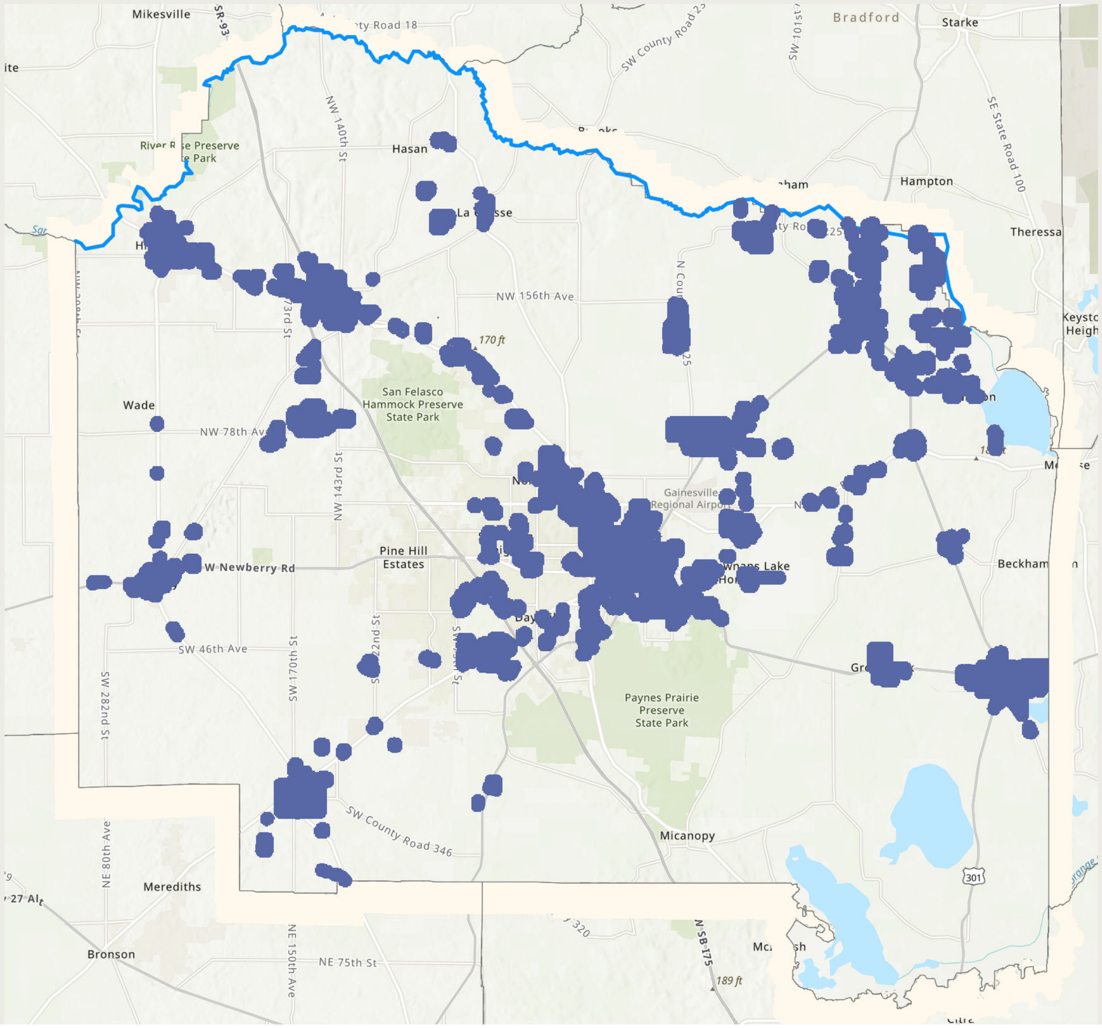
# HUD Qualified Census Tracts



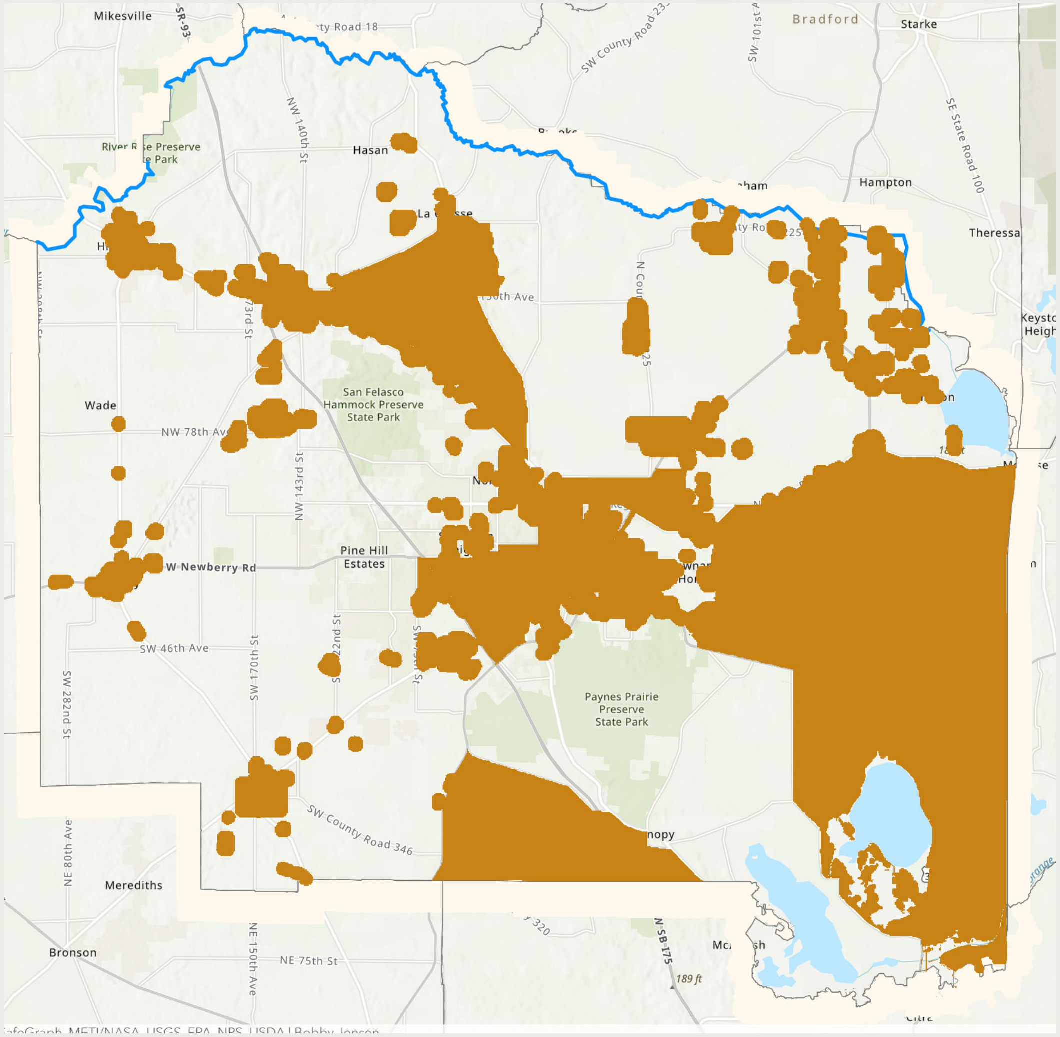
# Median Income < 185% Federal Poverty Guidelines

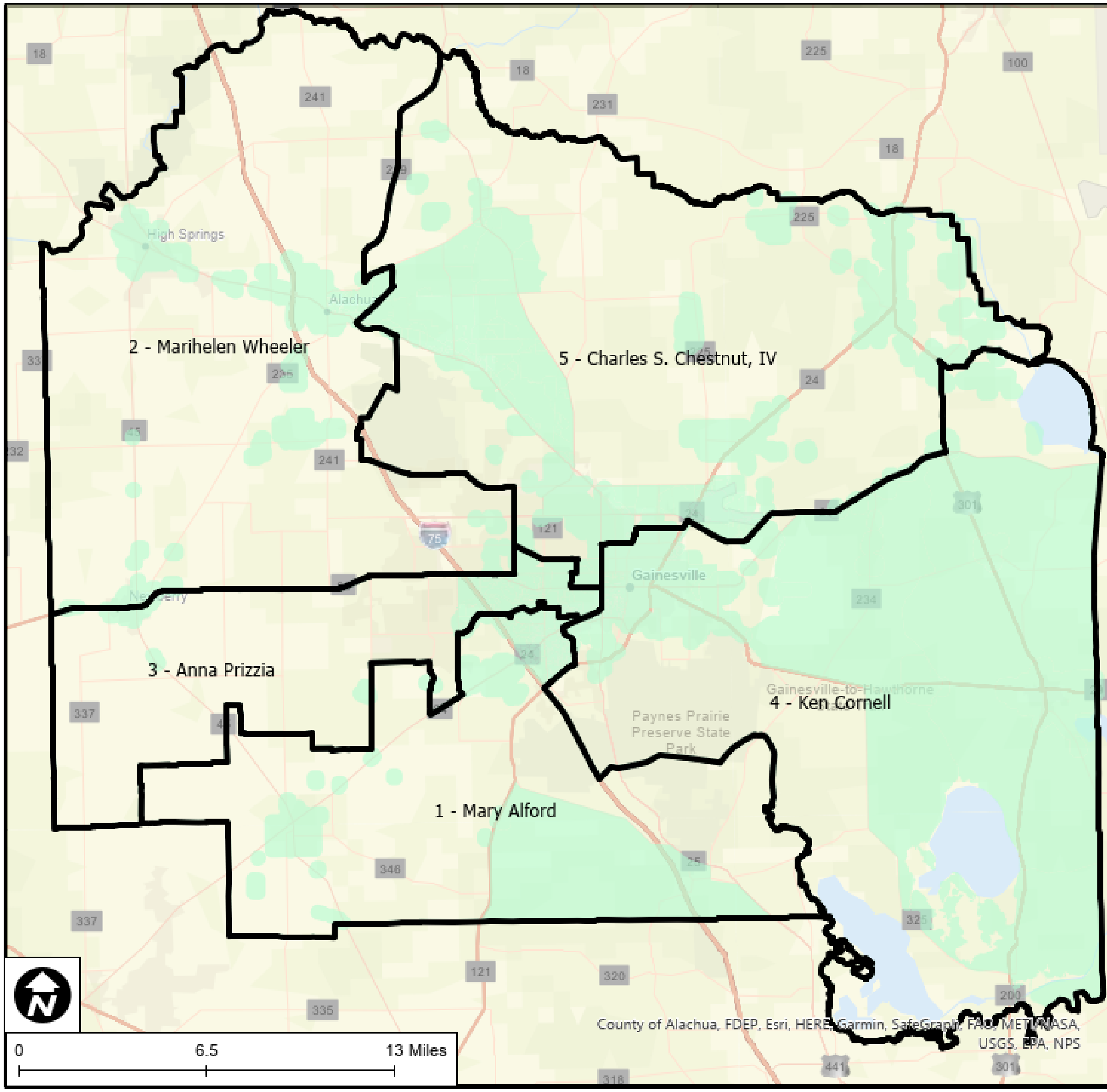


# Bottom 20% Residential Improvement Value w/ 1320 Buffer



# Final Inequity Areas






## PMP Inequity Areas

Legend
- Commissioner Districts
- Inequity Focus Areas

**ALACHUA COUNTY PUBLIC WORKS**

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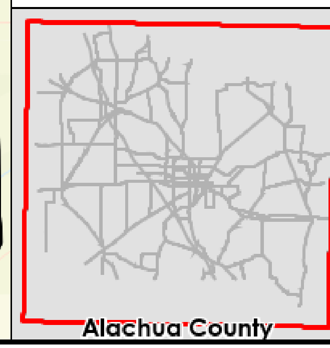
Date: January 03, 2023
Prepared by: PW GIS



# PMP Analysis Overview

## Baseline Scenario (Assumptions Provided to Consultant)

- **Includes Surtax with Base budget in 2023 = $17.7 Million**
  - Includes Infrastructure Surtax, Gas Tax, & General Fund Transfers
- **Includes 2% Budget Escalation each year of the analysis**
- **Includes 3% Cost Inflation each year of the analysis**
- **Cap Low Volume Roadway Investment at $500,000 per year (2.8% based on 1st year)**

## Areas of Inequity Analysis Scenarios:

- **20% Benefit Increase (Base Benefit * 1.2)**
- **25% Benefit Increase (Base Benefit * 1.25)**
- **30% Benefit Increase (Base Benefit * 1.3)**

## So, what does this mean? Let's review Benefit/Cost Optimization…

# PMP Analysis Overview

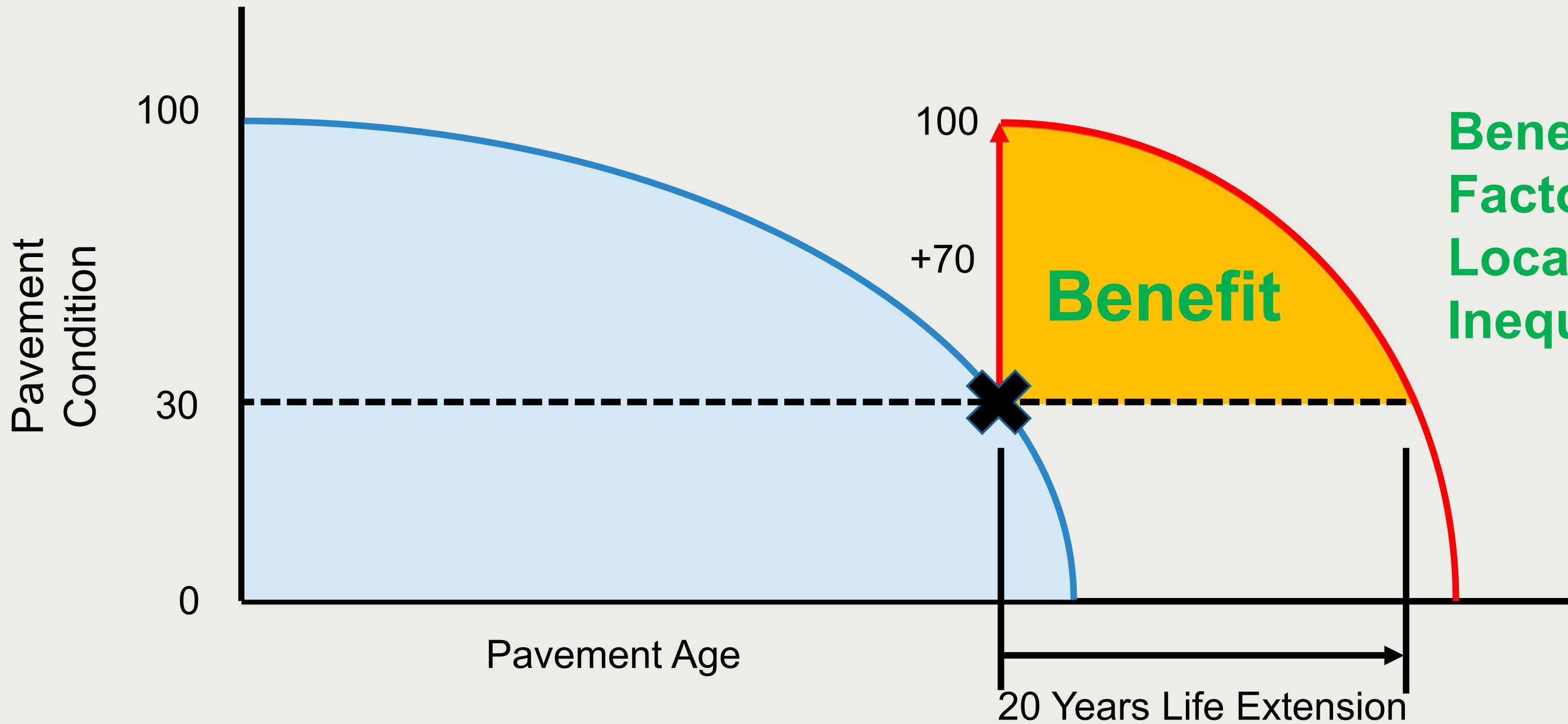
Alachua County, Florida



**Condition Improvement = 70 PCI Points**
**(100-30)**
**Life Extension = 20 Years**

## Benefit = Condition Improvement * Life Extension

# The Objective of Optimization – Maximize the Amount of Benefit from the Work Plan under Limited Budget




**Benefit Weight Factor: Located in Inequity Area**

**Benefit = Condition Improvement * Life Extension * Benefit Weighting**

# Let's see an Example of how this works…

CR 235 from: SR26 | to: NW 62 Ave
PCI = 38
Treatment = Rehab (Major)
<u>In Inequity Area</u>

CR 235 from: NW 62 Ave | to: NW 94 Ave
PCI = 38
Treatment = Rehab (Major)
<u>Not In Inequity Area</u>


# Let’s see an Example of how this works…

CR 235 from: SR26 | to: NW 62 Ave
PCI = 38
Treatment = Rehab (Major)
In Inequity Area (Benefit Wt. = 1.2)
Assumed Cost = $8 Million

CR 235 from: NW 62 Ave | to: NW 94 Ave
PCI = 38
Treatment = Rehab (Major)
Not In Inequity Area (Benefit Wt. = 1)
Assumed Cost = $7 Million

**Benefit = PCI Increase * Treatment Life Extension * Benefit Wt.**

Benefit = +62 PCI * 20 Years * 1.2 = 1,488

Benefit = +62 PCI * 20 Years * 1 = 1,240

**Let’s assume we have a $10 Million Budget (we can only pick one)**

Benefit/Cost = 1488/$8M = 186

Benefit/Cost = 1240/$7M = 177

# Things to Remember…

- **There are 1,831 individual road sections in the network**
- **They are all at varying conditions needing varying treatments**
- **There aren't enough funds to fix them all**
  - **The County will always have a backlog**
- **Optimization is determining which few road sections will best spend the limited funds (this builds the project work plan)**
- **When a Weight Factor is applied such as Inequity Area, it increases the attractiveness of selecting these roads over Non-Inequity Area roads**
- **The process provides the County the ability to automate project recommendations when building the CIP in an objective way**

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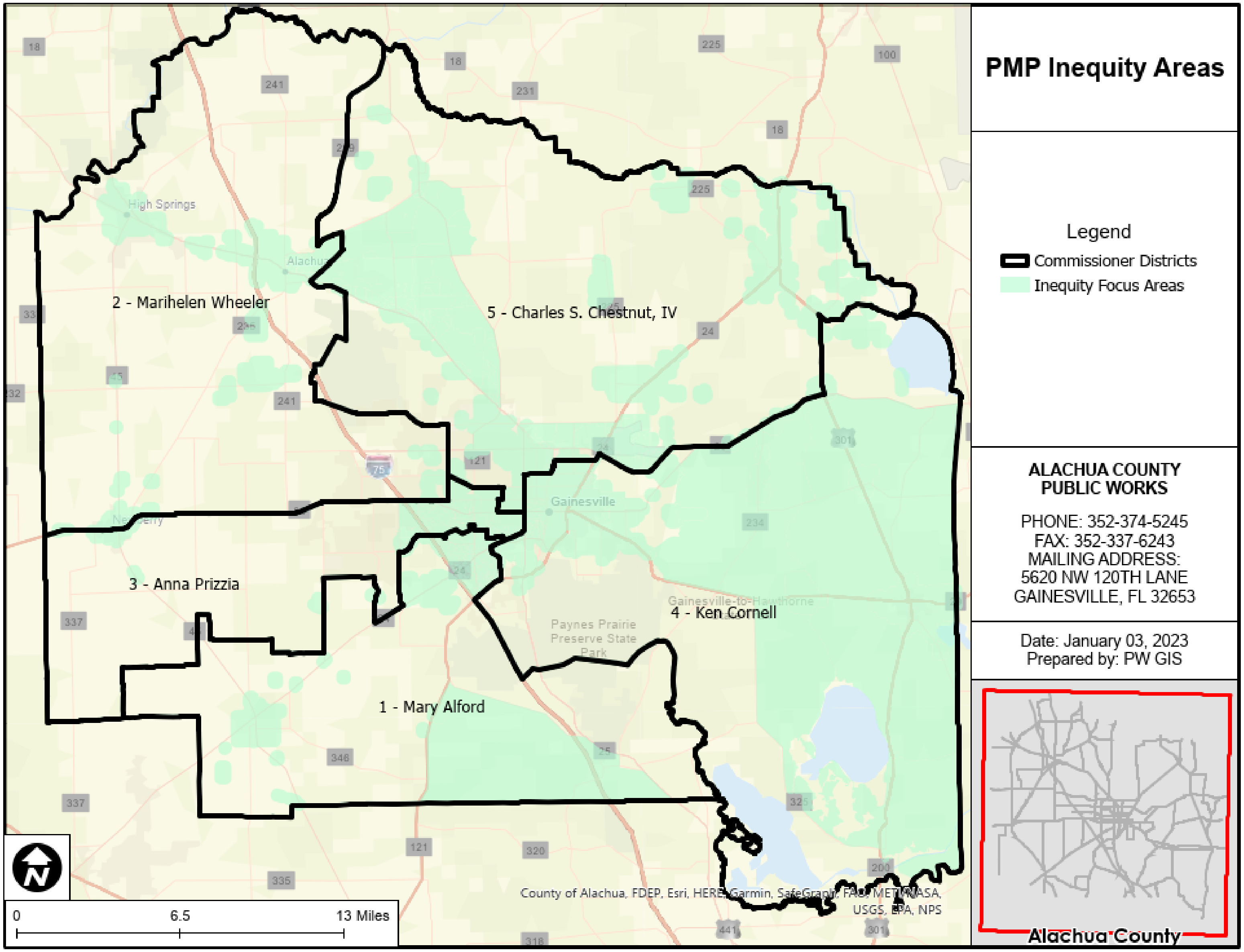
# Inequity Area Analysis Results

January 17, 2023

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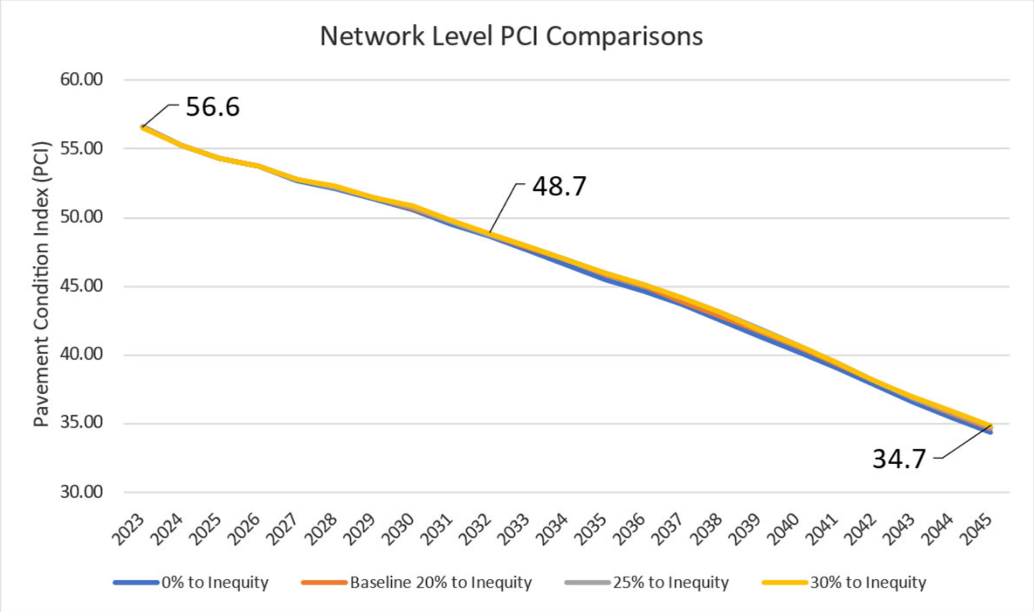
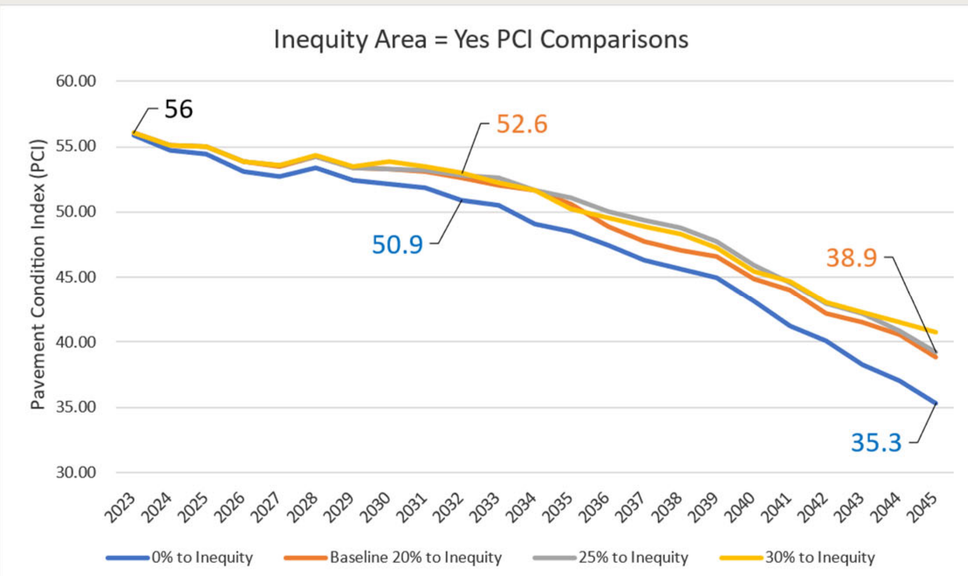
# Network Pavement Condition Index (PCI) Summaries

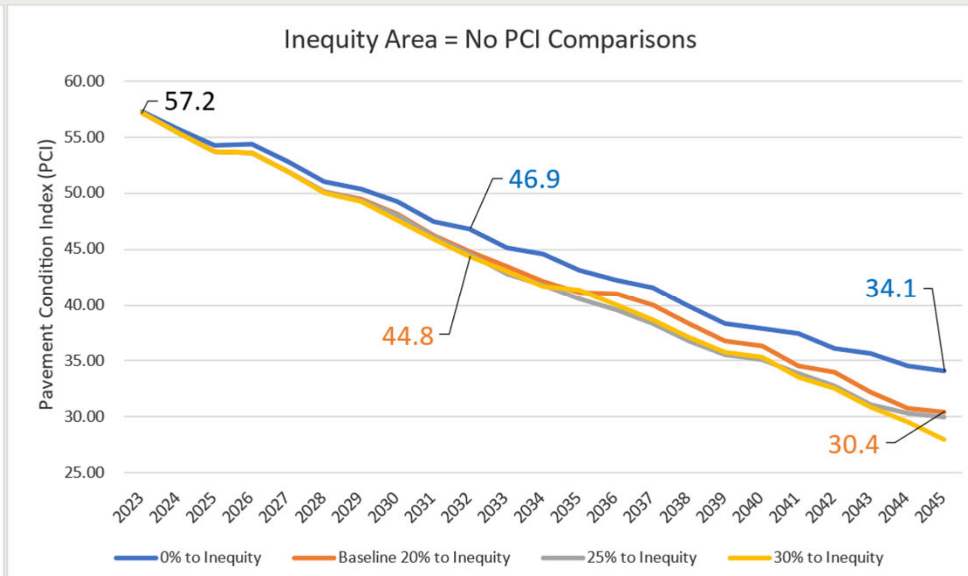
| Scenario | 2023 PCI | 2045 PCI | 2045 Change from Baseline |
|---|---|---|---|
| Baseline Budget | 56.6 | 33.5 | 0 |
| 20% Inequity Area Benefit Increase | 56.6 | 33.8 | +0.3 |
| 25% Inequity Area Benefit Increase | 56.6 | 33.9 | +0.4 |
| 30% Inequity Area Benefit Increase | 56.6 | 34 | +0.5 |



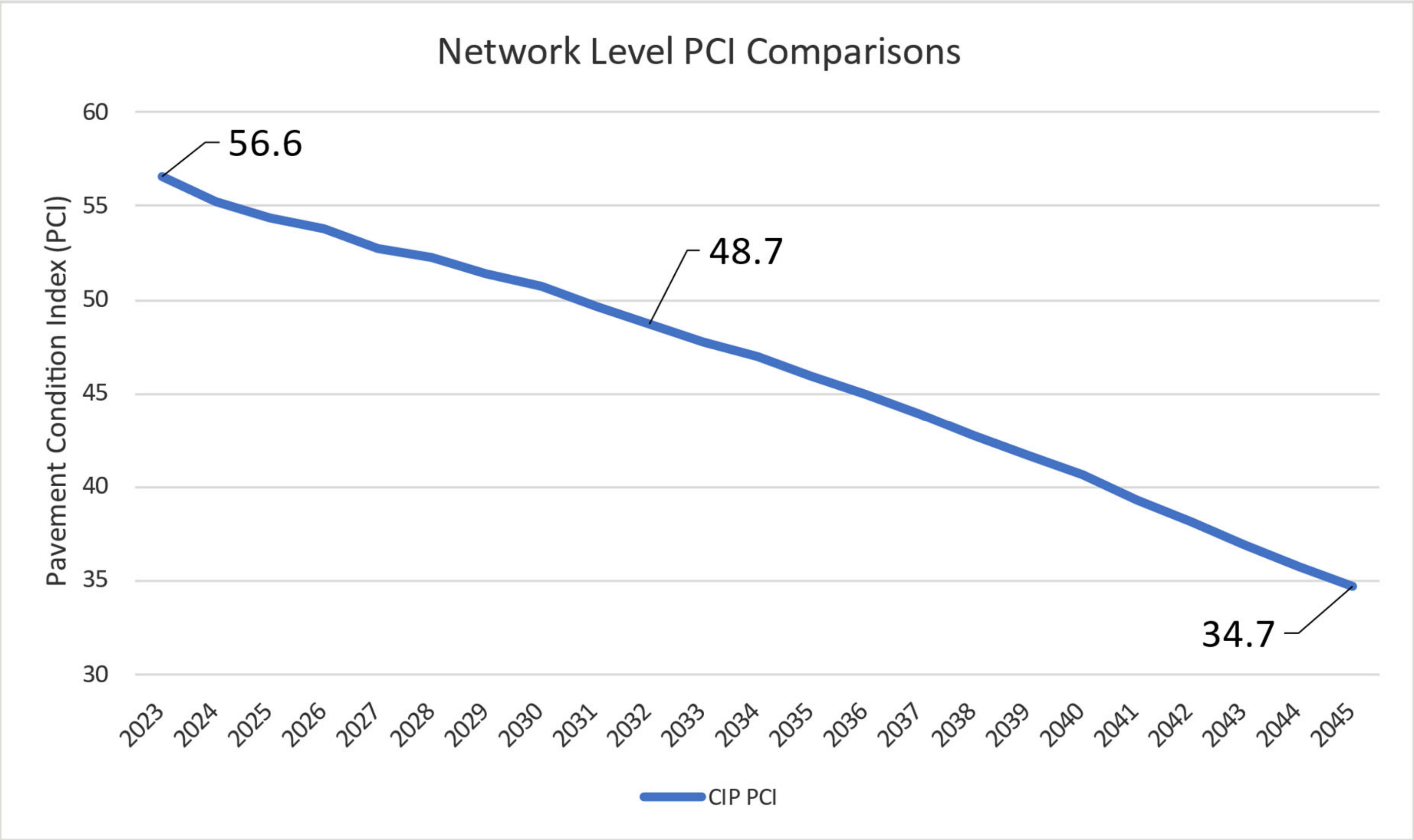
# Areas of Inequity Pavement Condition Index (PCI) Summaries

| Scenario | 2023 PCI | | 2045 PCI | | 2045 Change from Baseline | |
|---|---|---|---|---|---|---|
| **Inequity Area (Y/N)** | **Y** | **N** | **Y** | **N** | **Y** | **N** |
| Baseline Budget | 56 | 57.2 | 33.3 | 33.8 | 0 | 0 |
| 20% Inequity Area Benefit Increase | 56 | 57.2 | 36.8 | 30.1 | +3.5 | -3.7 |
| 25% Inequity Area Benefit Increase | 56 | 57.2 | 37.2 | 29.7 | +3.9 | -4.1 |
| 30% Inequity Area Benefit Increase | 56 | 57.2 | 38.8 | 27.7 | +5.5 | -6.1 |



# Network PCI Comparisons



## Summary

- **This is a leading-edge analysis considering Inequity – very important topic in Asset Management, but few examples available from around the US**
- **Areas of Inequity currently have a lower average PCI than rest of County network**
- **Increasing Benefit Weight to Areas of Inequity will improve the network condition (PCI) in Areas of Inequity**
- **Increasing Benefit Weight to Areas of Inequity will lower the network condition (PCI) outside of Inequity Areas**

# Summary

- **For the Proposed CIP, 20% Benefit Weight for Areas of Inequity was utilized.**

- **Overall, the current funding does not maintain the overall network PCI.  i.e. to improve the overall network, more funds would be needed**

- **Important:**
  - **This is an analysis of limited budgets, which means not all roads can be fixed.**
    - **Not all roads get selected in the analysis.**
    - **If additional revenues are allocated, or revenues exceed projections, more roads can be selected for repairs.**