

# Tough Challenges Ahead: The Navigation Infrastructure

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**BUILDING STRONG**



# Risk and Reliability

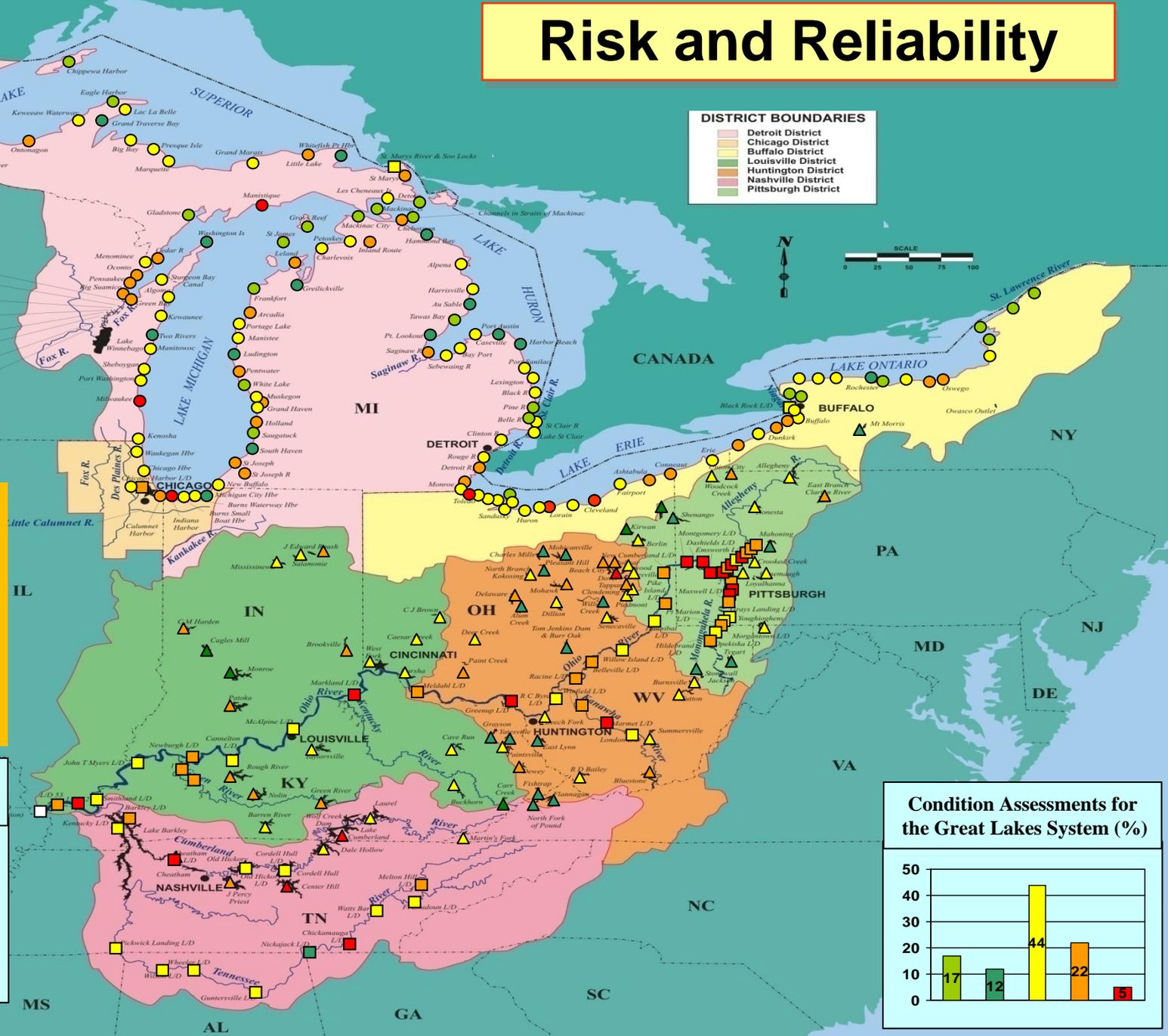
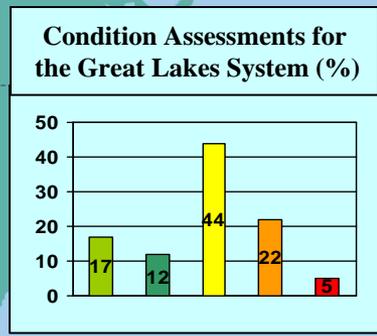
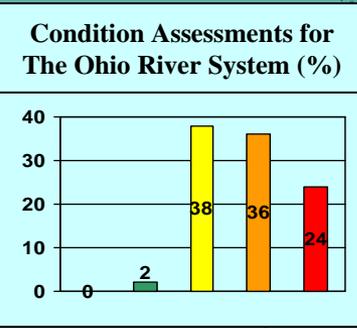
**DISTRICT BOUNDARIES**

- Detroit District
- Chicago District
- Buffalo District
- Louisville District
- Huntington District
- Nashville District
- Pittsburgh District

**Condition or DSAC**

- A/V
- B/IV
- C/III
- D/II
- F/I
- Under Construction

- Drivers**
- Dam Safety
  - Navigation Infrastructure
  - GL DMMP
  - Asian Carp/AIS
  - IWRM



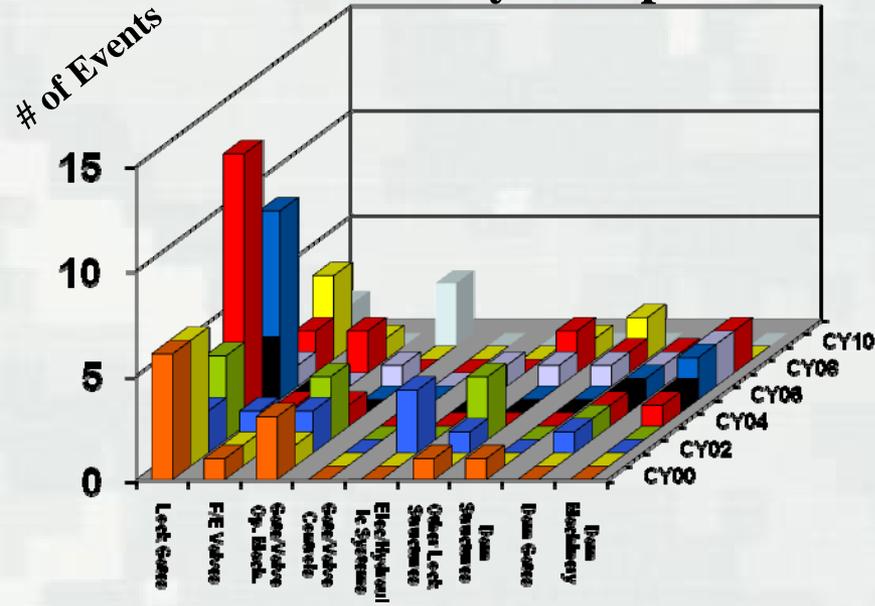
# System Un-Reliability

- Deteriorating Infrastructure
- Design limits reached
- Increased usage
- Unanticipated work during dewaterings
- Limited resources or constraints
- “Fix as fails” mode of operation

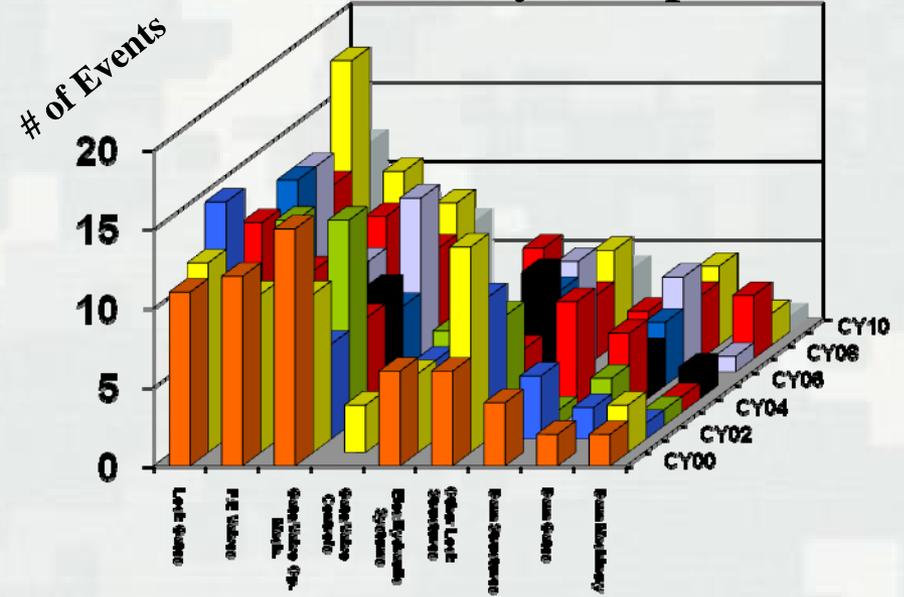


# Ohio River Navigation

## Unscheduled Work by Component

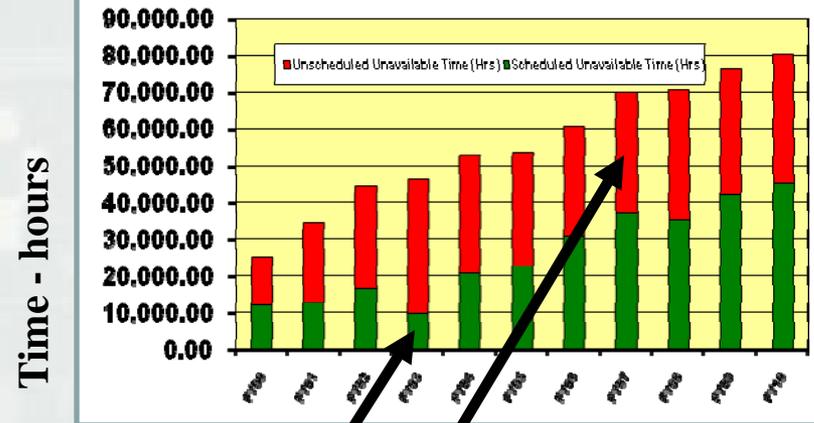


## Scheduled Work by Component



Markland Gate Failure 2009    Greenup Failure 2010

## Lock Outages

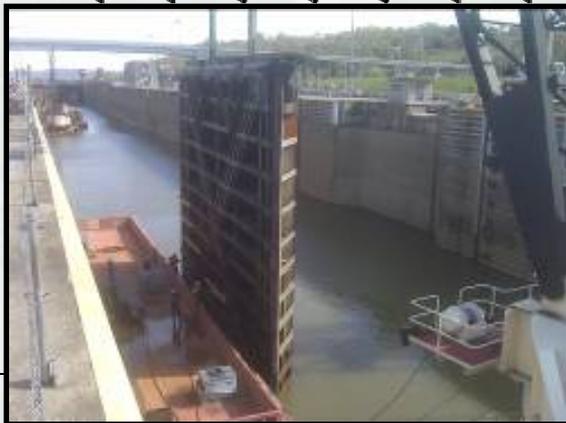
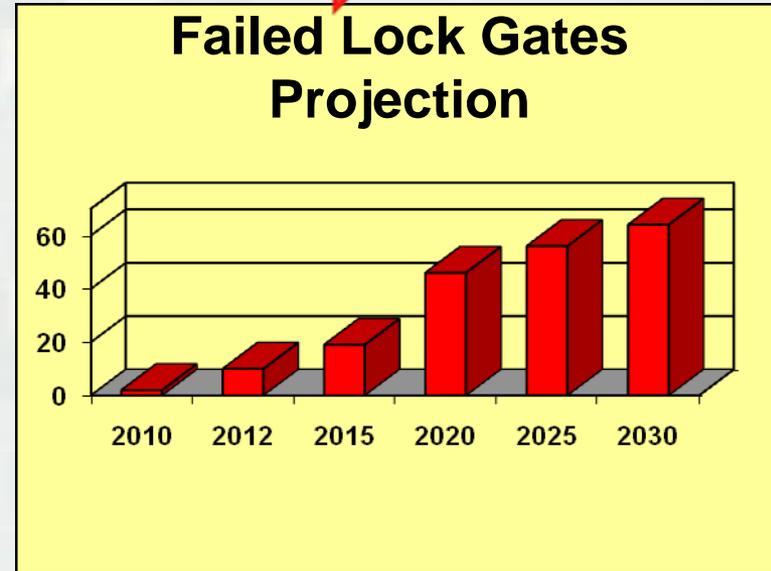
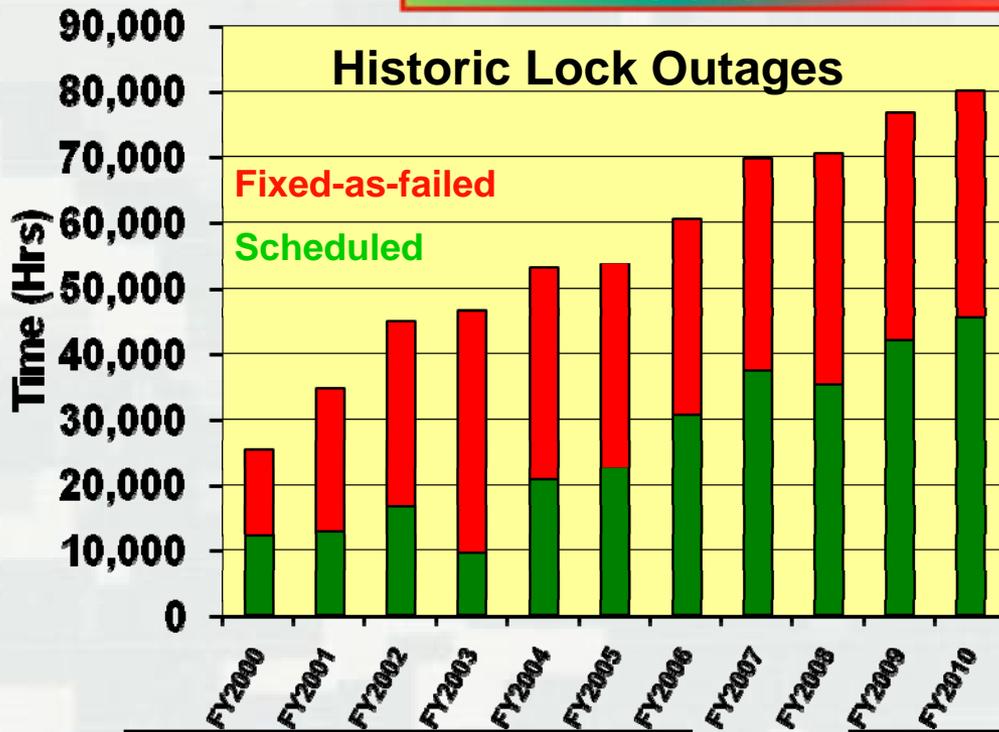
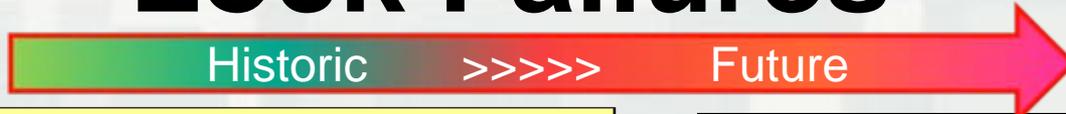


Scheduled

Unscheduled

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# Lock Failures



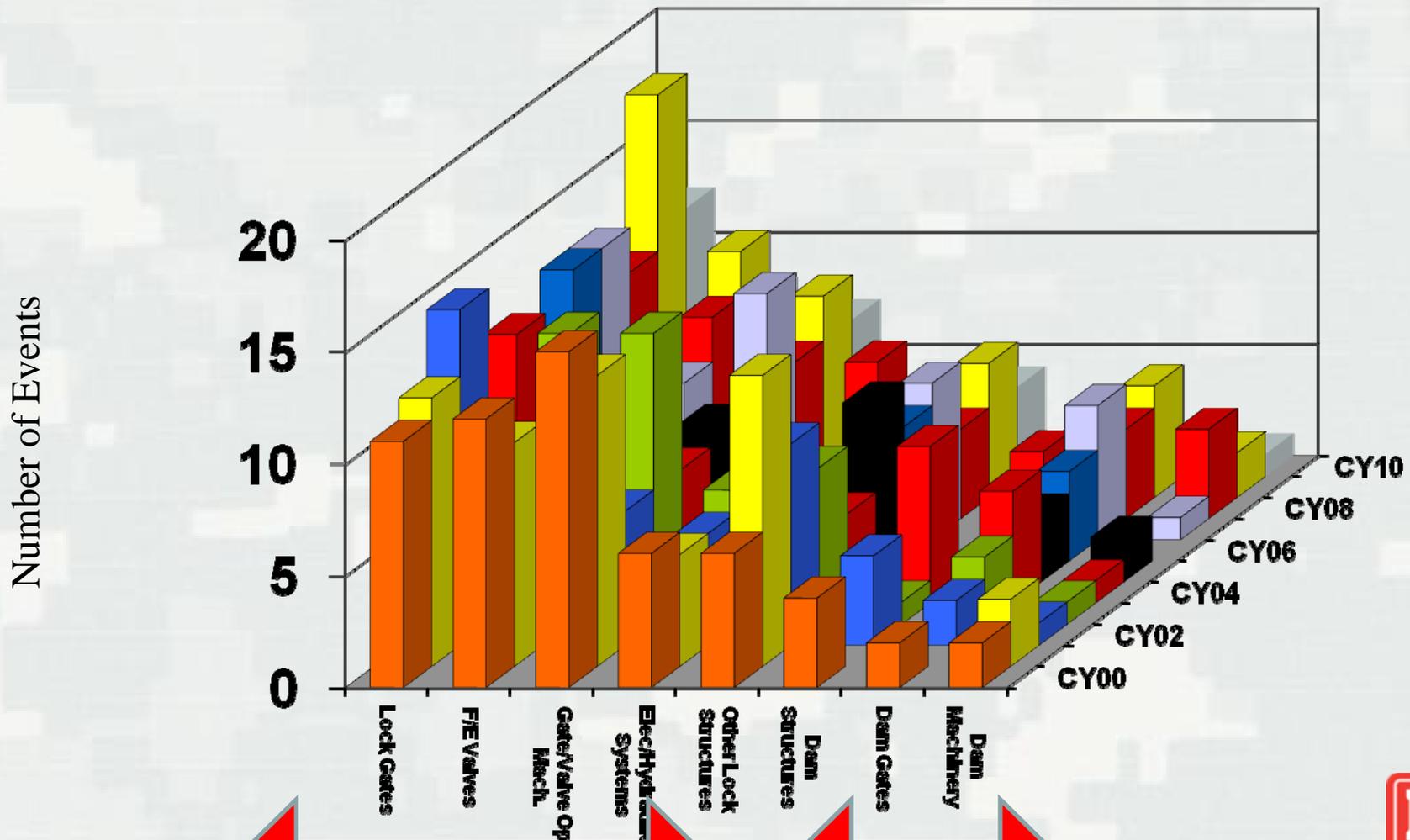
Markland Gate Failure 2009



Greenup Failure 2010



# Ohio River System Scheduled Work by Component



Lock systems  
have greatest need

Dams



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# O&M Pressures



- Miter Gates
- Ohio River Navigation Dams
- High Risk Projects
- Repair Fleets
- Dam Safety IRRM
- Hydropower
- Joint Costs – Multipurpose Projects
- Levee Program

- Lock & Dams 52/53
- Mon River
- Emsworth L&D
- Greenup L&D
- Markland Locks
- RC Byrd Locks

# The O&M Crisis

## Problem

Deteriorating Infrastructure

+ Inability to Rehabilitate

+ Escalating Engineering Standards

+ Accelerating O&M Requirements

+ New Projects

+ Stagnant Budget

## Options

(A) Operations or Maintenance

(B) Recapitalization or maintenance

(C) Bring new project on-line or not

(D) Apply new Standards or not

(E) Increase Budget or not

(F) Implement National Asset Mgmt or not

(G) Systemic Life Cycle Fix

=

O&M Crisis

Accelerating  
Infrastructure Crises



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# Program Strategy

- Exigent infrastructure repaired within the affordable and expected program levels
- Regional maintenance model used to determine most critical projects
- Continue aggressive inspection program w/interim repairs
- Fully realize regional resources to minimize impact to Navigation System
- Embrace Regional Maintenance Standards
- Continue to investigate replacement options, reliability initiatives and methods

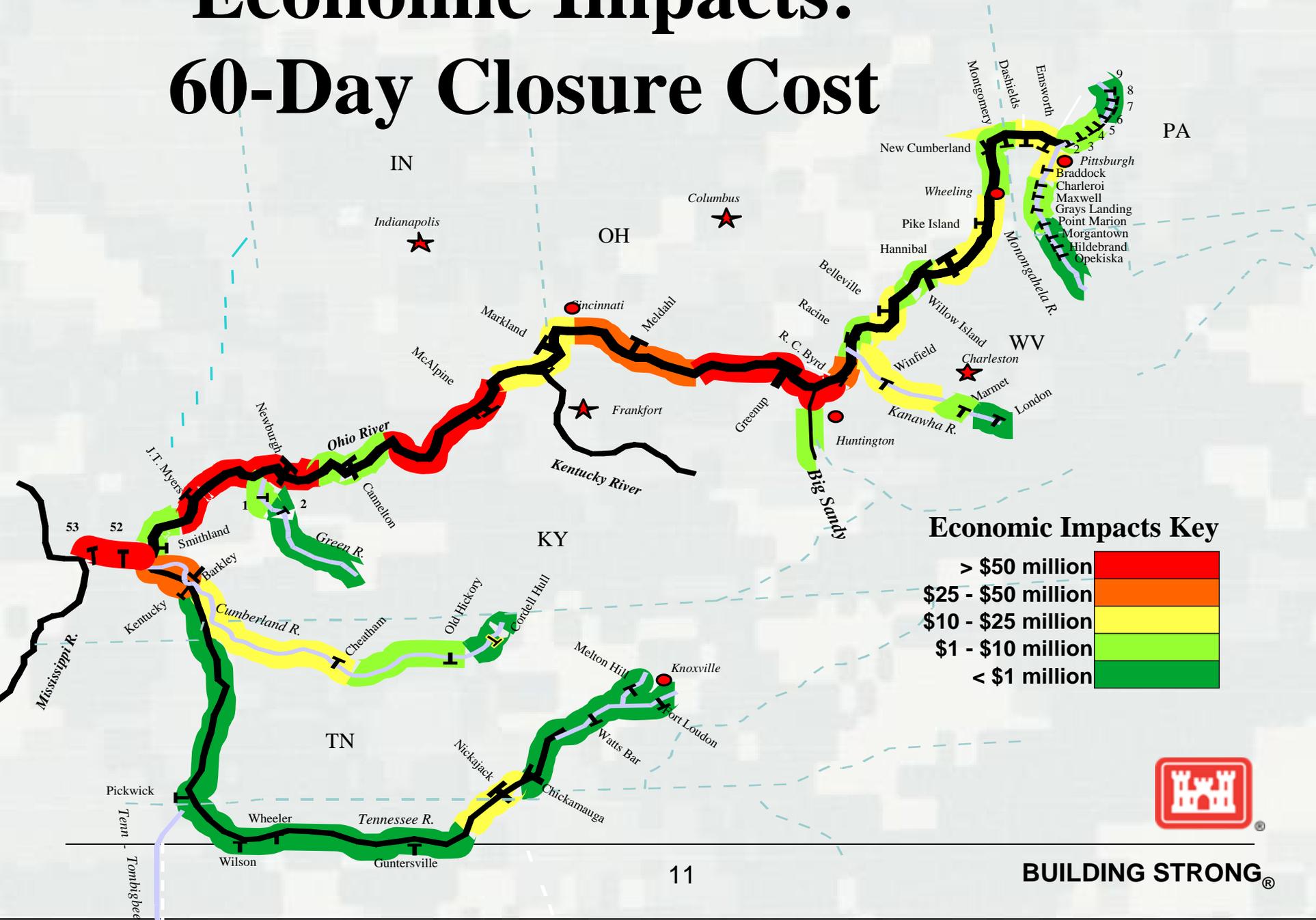


# **Why are all these issues and initiatives important ?**

*.....The economic impacts are great for unscheduled lock closures!*



# Economic Impacts: 60-Day Closure Cost



# Dilemma - Nearing the Tipping Point

- System reliability will continue to degrade under pressures
- Must embrace regional maintenance model for reliability
- Address exigent maintenance issues using Asset Management and Risk Based principles
- Industry and the Corps have a shared responsibility to the Nation
- Sharing lessons learned and best practices - *This Workshop!*

