



# Bridge Management Overview

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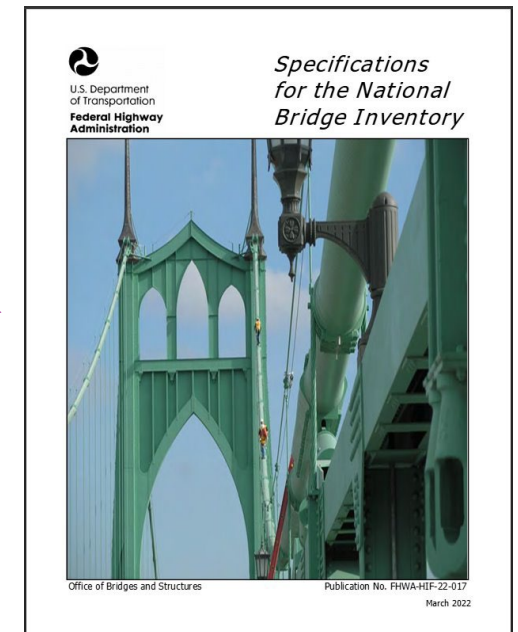
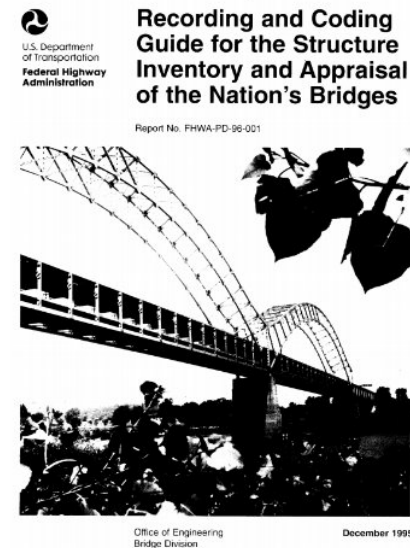
2026 AASHTOWare Connect | Des Moines, IA | April 21-22, 2026

# BrM Overview Agenda

- Overview & History
- Bridge Management
  - Data collection
  - Assignment & review workflows
  - Validation & submittal
  - Configuration
- Program Planning & Optimization
  - Configuration
  - Projects & Programs

# Overview & History

- Version 1: 1991
- Version 7: 2024
  - Rebuilt to reflect changes from NBI to SNBI
- Version 7.2: April 2026



# Inventory & Appraisal Data

- Identification
  - Location & Map
  - Classification
  - Construction
  - Geometry
  - Appraisal
  - Railings & Transitions
- Design
  - Superstructure Sets
  - Substructure Sets
  - Structure Units
- Features
  - Highways, Railroads, Waterways, Relief for Waterways, Pathways, Urban Features, Dry Terrain or Side Slopes

The screenshot shows a web-based form for bridge identification. At the top, there is a breadcrumb trail: 'Bridges > Inventory & Appraisal > Identification'. Below this, there are three input fields: 'Bridge ID \*' with the value '111', 'Feature Intersected' with the value 'Monongahela River', and 'Facility Carried' with the value 'I-376'. The main section is titled 'Identification' and contains a 'Details' sub-section. This section includes several input fields: 'Bridge Number (B.ID.01) \*' (111), 'Agency Bridge ID \*' (111), 'Bridge Name (B.ID.02)' (Test Bridge 1), 'Bridge Nickname' (Test Bridge 1), 'Bridge Facility Carried' (I-376), 'Bridge Feature Intersected' (Monongahela River), 'Bridge Status' (3 Active), and 'Bridge Life Cycle Phase' (1 Service). There are also two checkboxes: 'Report Bridge to FHWA' and 'Report Elements to FHWA', both of which are checked. A 'Bridge Notes' field contains the text 'First Test Bridge'. Below the 'Details' section is a 'Past and Future Bridges' section with two empty input fields for 'Past Bridge ID (B.ID.03)' and 'Future Bridge ID'.

# Inspection Data





















- Condition
  - General Condition Ratings
  - Element, Protective System, Defect condition ratings
- Schedule
  - Inspection Types Being Performed
    - Agency-defined inspection types
  - Upcoming Inspections
- Inspection Plan
  - Equipment
  - Procedures

Element Conditions

Quantity/Percentage Structure Unit Environment  
Quantity All All

Search

Expand All Add New

Inspected	ID	Name	Structure Unit	Type	Environment	Total Quantity	Units	CS 1 Qty	CS 2 Qty	CS 3 Qty	
<input checked="" type="checkbox"/>	241	Re Conc Culvert	1	Element		900	ft	892	8	0	   
<input checked="" type="checkbox"/>	510	Wearing Surfaces	1	Protective System / Wearing Surface		5000	sq.ft	5000	0	0	   
	3220	Crack (Wearing Surface)	1	Defect		8	sq.ft	8	0	0	 
	1080	Delamination/Spall/Patched Area	1	Defect		8	ft	0	8	0	 
	1090	Exposed Rebar	1	Defect		3	ft	3	0	0	 
	1120	Efflorescence/Rust Staining	1	Defect		16	ft	16	0	0	 
<input checked="" type="checkbox"/>	242	Timber Culvert	1	Element		21	ft	21	0	0	   

# Inspection Assignment - Management

- Configure which inspection types are appropriate for assignment (ex: routine vs damage)
- Assign to Groups or to individual BrM users
- Reassign unassigned inspection needs
- Track completion of inspection events & reviews

Inspection Management > Inspection Assignment

### Inspection Assignment

Unassigned Inspections | Assignments

Unassigned Inspections Due in Next 3 months

Search [Export](#)

Due Date	Inspection Type	Bridge ID	Highway Agency District (B.L.04)	County Code (B.L.02)	Owner (B.CL.01)	Maintenance Responsibility (B.CL.02)	Previous Group A
7/20/2024	Routine	444			S01 State transportation department	S01 State transportation department	
7/20/2024	NSTM	444			S01 State transportation department	S01 State transportation department	
7/20/2024	Underwater	444			S01 State transportation department	S01 State transportation department	
7/20/2024	Routine	555			S01 State transportation department	S01 State transportation department	
7/20/2024	NSTM	555			S01 State transportation department	S01 State transportation department	
7/20/2024	Underwater	555			S01 State transportation department	S01 State transportation department	

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# Inspection Assignment - Inspectors

- View list of items assigned to logged in user
- Begin new inspection events

Bridges > Inspection > My Assignments

### My Assignments

Filter  
Not Complete

Search [Export](#)

Name	All Inspections Performed By	All Reviews Completed By	Group	Recurring Number of Months	Expected Cost	Number of Inspections	Not Started	Enter
July 2024 Inspections	7/31/2024	10/31/2024	District 1 Inspectors			9	3	
August 2024 Inspections	8/31/2024	11/30/2024	District 1 Inspectors			6	6	

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# Inspection Review - Management

- Define review steps (office review, field review)
- Define conditions for review group for each step
- Include Validate in workflow

Settings > General Configuration > Inspection > Inspection Review

### Inspection Review

Workflow Steps Settings Data Values Highway Values

Steps will be checked in order. A step is chosen for a given inspection when any condition in the step matches the given inspection. System checks all steps for all inspection types.

Order #	Name	Days to Complete	Generate Report	Updated By	Updated On	
↓	1 QC Review	30		Admin, Mayvue	7/24/2024	✎ 🗑
↓	2 Field Review	60		Admin, Mayvue	7/24/2024	✎ 🗑

[Add New](#)

# Inspection Review - Reviewers

- Inspections that logged in user is eligible to review
- Inspections that logged in user is currently reviewing
- See an overview of all reviews in progress

Bridges > Inspection > My Pending Inspection Reviews

### My Pending Inspection Reviews

Layout  
Inspection Review Fields ▾

Inspections Pending Review My In-Progress Reviews

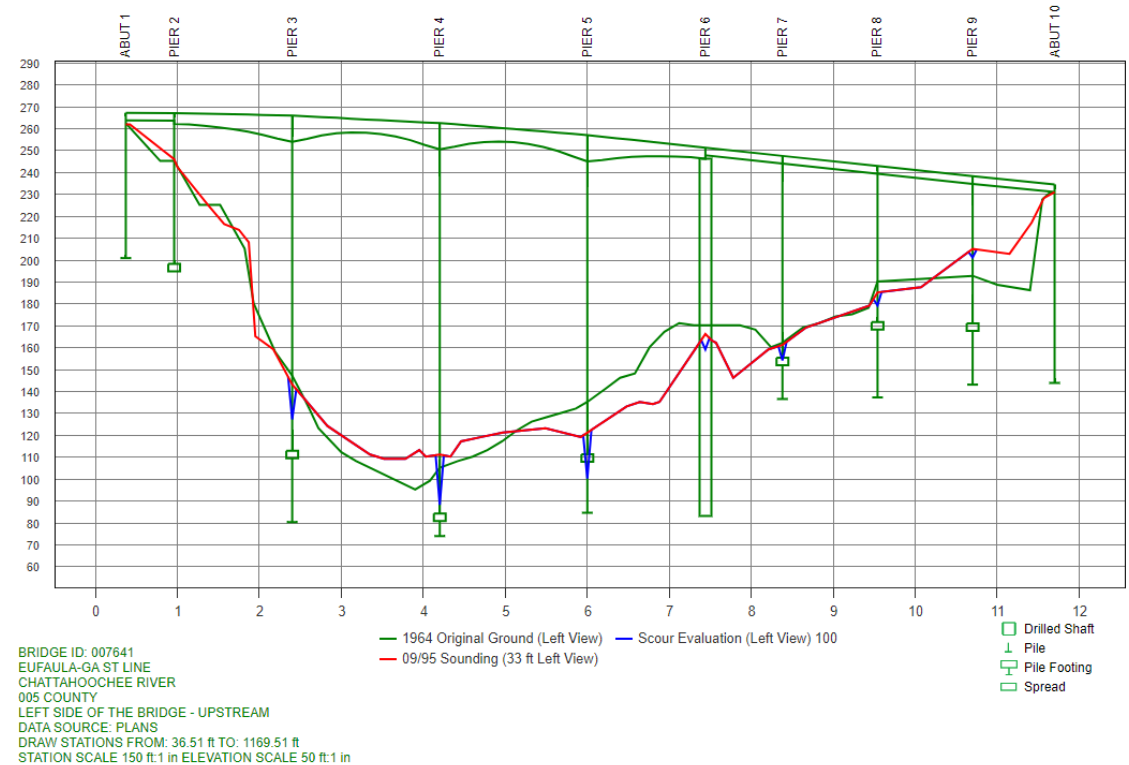
Search [Export](#)

Due Date for Review ↑	Days Remaining for Review ↑	Step ↑	BridgeID ↑	District ↑	County ↑	Inspection Types ↑	Inspection Begin Date (B.IE.02) ↑	Previous Review Completed By ↑
8/25/2024	30	Step 1	666			Routine Complex	7/26/2024	
8/25/2024	30	Step 1	444			Scour Monitoring, Routine	7/26/2024	
8/25/2024	30	Step 1	555			Routine Complex, NSTM, Underwater	7/26/2024	

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# Cross Sections

- Streambed Cross Sections
- Scour Potential Evaluation
- Structure Detail
- Original Streambed Evaluation
- Scour Resistant Layer
- Graphing



# Load Ratings

- Reportable event indicator
- Agency-defined vehicles

Bridges > Load Ratings > Load Ratings

Bridge ID 111      Load Rating Date (B.LR.03) 5/20/2025      Feature Intersected Monongahela River

Facility Carried I-376

### Edit Bridge Load Rating

Event Name \* Rating      Load Rating Date (B.LR.03) \* 05/20/2025

Report This Event

Load Rater      Reviewer

Software Used      Secondary Software

Load Rating Method (B.LR.04)      Routine Permit Loads (B.LR.08)

Description

Wearing Surface / Fill Depth (in)      Category

### Ratings

Search      Export      Add New

Vehicle (B.EP01)	Rating Factor (B.EP02)	Tons	Analysis Type	Limit State	Location	Description	Default Rating for Vehicle	Inventory Load Rating Factor (B.LR.05)	Of
HS-20 Operating			0 Design				★		
HS-20 Inventory			0 Design				★		
HL-93 Operating			0 Design				★		
HL-93 Inventory			0 Design				★		

# Load Postings

- Map Vehicle Types to Sign Types
- Uses reportable Load Rating event

Bridges > Load Ratings > Load Posting Status

Bridge ID ⓘ  
111

Load Posting Status Date (B.PS.02) ⓘ  
5/20/2025

Feature Intersected ⓘ  
Monongahela River

Facility Carried ⓘ  
I-376

### Edit Bridge Load Posting Status

#### Load Posting Status & Values

Posting Status Change Date (B.PS.02) \*  
05/20/2025

Open/Posted/Closed \*  
Weight

Permanent/Temp/Supported \*  
Permanent

Load Posting Status (B.PS.01)  
PP

#### Load Posting Status & Signs

Text of Load Posting Signs

[Add New](#)

Sign Type ↑↓	Posting Type (B.EP03) ↑↓	Posting Value (B.EP04) ↑↓
No records to display.		

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# Work Events & Work Candidates

- Work Events
  - Reportable work performed on bridge
- Work Candidates
  - Potential work to be performed on bridge

Work Events for Bridge

Search  [Export](#) [Add New](#)

Year Performed ↓ 1	Work Performed ↓ 2	Description ↑↓	
2024	IP1 Widened	description for widening improvement	<a href="#">Edit</a> <a href="#">Delete</a>
2022	JT1 Replaced	description for replaced deck joints	<a href="#">Edit</a> <a href="#">Delete</a>

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Work Candidate

Filter:  Source:

Open ▾ All ▾

Search  [Export](#) [Add New](#)

Name ↑↓	Action ↑↓	Date Recommended ↑↓	Target Year ↑↓	Estimated Cost ↑↓	Status ↑↓	Work Assignment ↑↓	Priority ↑↓	Structure Unit ↑↓	Date Completed ↑↓	Source ↑↓	
Work Candidate 1	Paint Sub - Network	6/14/2024	2024			Contractor	High			Inspector Recommen	<a href="#">Edit</a> <a href="#">Delete</a>
Work Candidate 2	Paint Super - Network	6/14/2024	2024			Contractor	High			Inspector Recommen	<a href="#">Edit</a> <a href="#">Delete</a>

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# Critical Findings

- Approval workflow
- Optional email to configured FHWA contacts
- Reminder emails for open critical findings

Bridges > Inspection > Critical Findings

Bridge ID 111      Critical Finding ID 111-05202025      Feature Intersected Monongahela River

Facility Carried I-376

### Edit Bridge Critical Finding

Critical Finding Status

Status	Current Priority Level	Sent to FHWA
Pending Level 1 Review	Serious	False

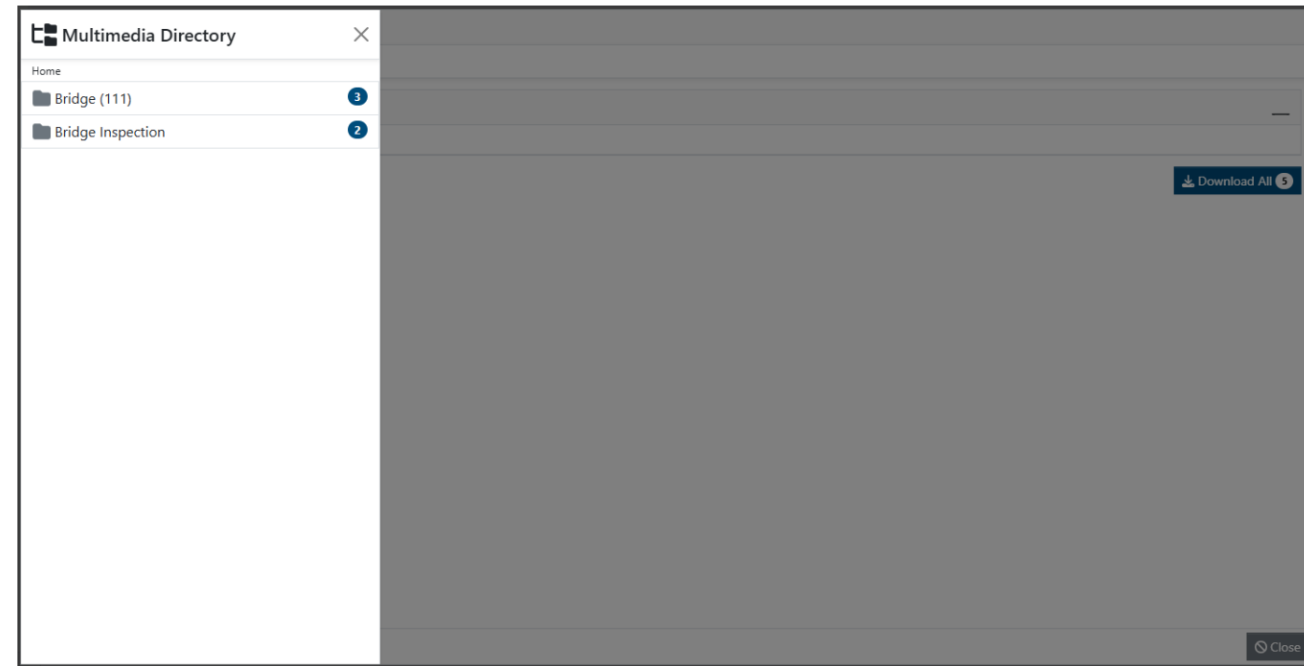
[Send to FHWA](#) [Not a Critical Finding](#)

### Critical Finding Data

Reporter User, Pontis	Reporter Phone	Reporter Email Pontis@Mayvue.com
Date/Time of Finding 05/20/2025 10:18	Discovered During Inspection 05/20/2025 (MHUV)	Category C - Collision (bridge hit/impact)
Initial Priority Serious	Initial Action Taken Close Lane(s)	Bridge Owner Contacted Date/Time 05/20/2025 10:18
Contacted Name	Contacted Phone	
Description bridge hit		

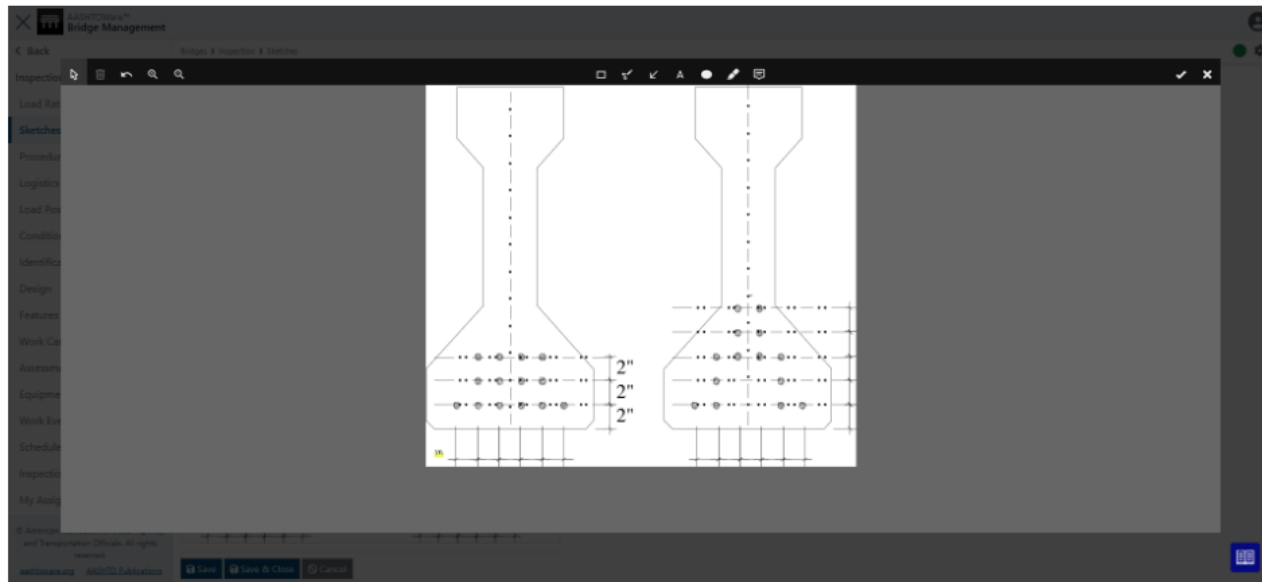
# Multimedia

- Bridge-level and inspection event-level folders
- Categorization
- File linking to track an issue throughout multiple inspections



# Multimedia - Sketches

- Start from template or from specific image file
- Mark up file and save as copy



# Validation & Submittal

- Validation
  - Select specific bridges or run for all reportable bridges in database
  - Summary & results of all SNBI Data Validations
- Submittal
  - Select specific bridges or run for all reportable bridges in database
  - Creates json file for submittal to FHWA

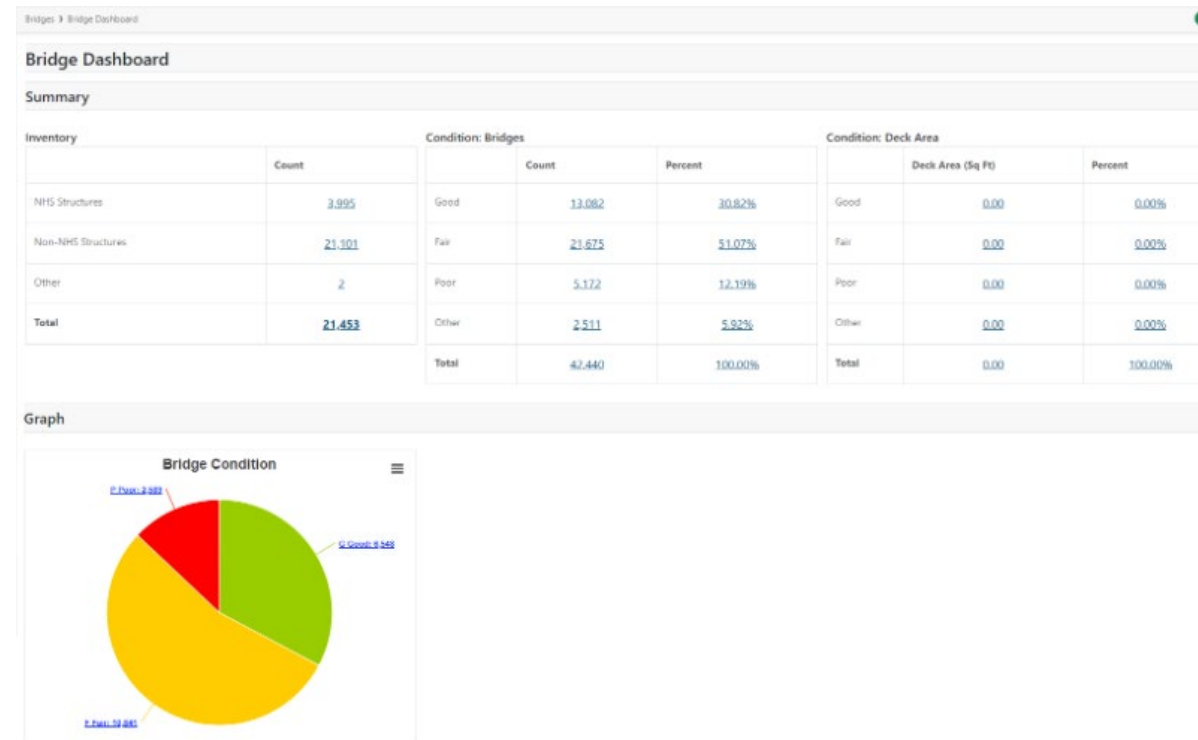


The screenshot shows a web application interface for validating bridge data. It features a header with 'Validate' and tabs for 'Assets', 'Summary', and 'Results'. An 'Export' button is visible. Below is a table with columns for Bridge ID, Highway Agency District (B.L.04), County Code (B.L.02), Critical Errors, and General Errors. The table contains three rows of data.

Bridge ID	Highway Agency District (B.L.04)	County Code (B.L.02)	Critical Errors	General Errors
00110			18	20
00/001			18	20
10/110			18	21

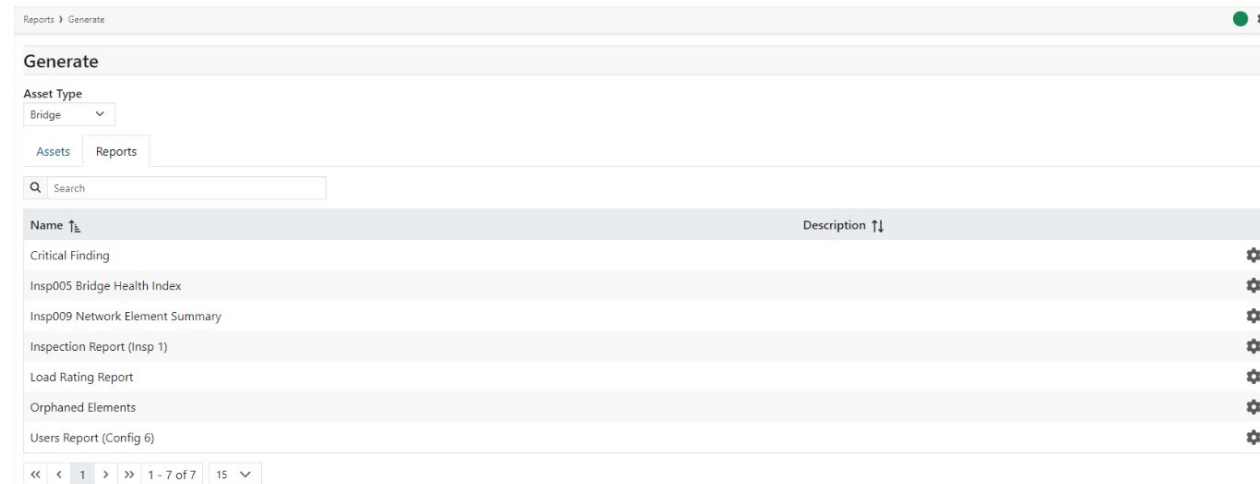
# Configuration for Agency Processes

- Use Page Builder to create
  - Form pages (bridge, bridge inspection)
  - Dashboards (overview of data for all bridges)



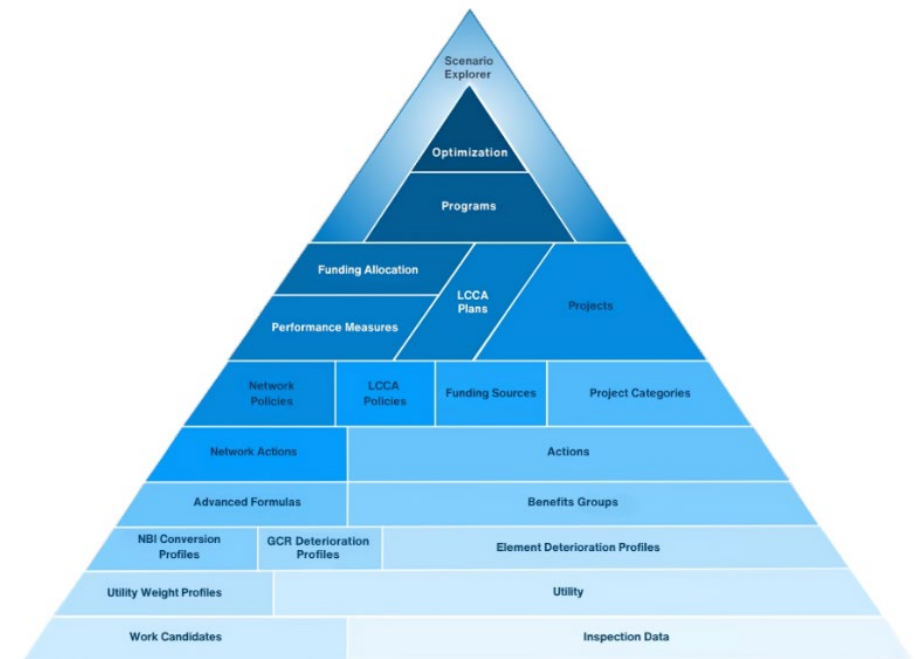
# Reports

- Run standard reports
- Can create configured agency-specific reports



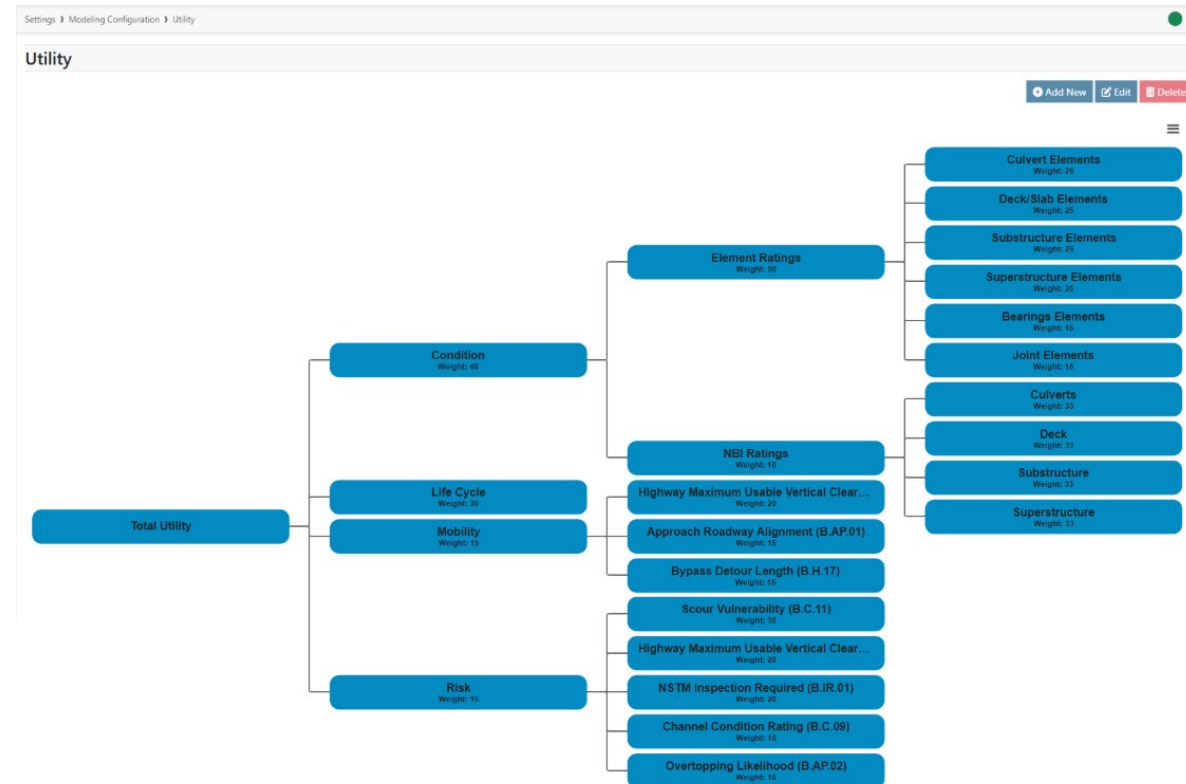
# Program Planning – Modeling Configuration

- Follow BrM pyramid to complete modeling configuration settings to run program optimizations



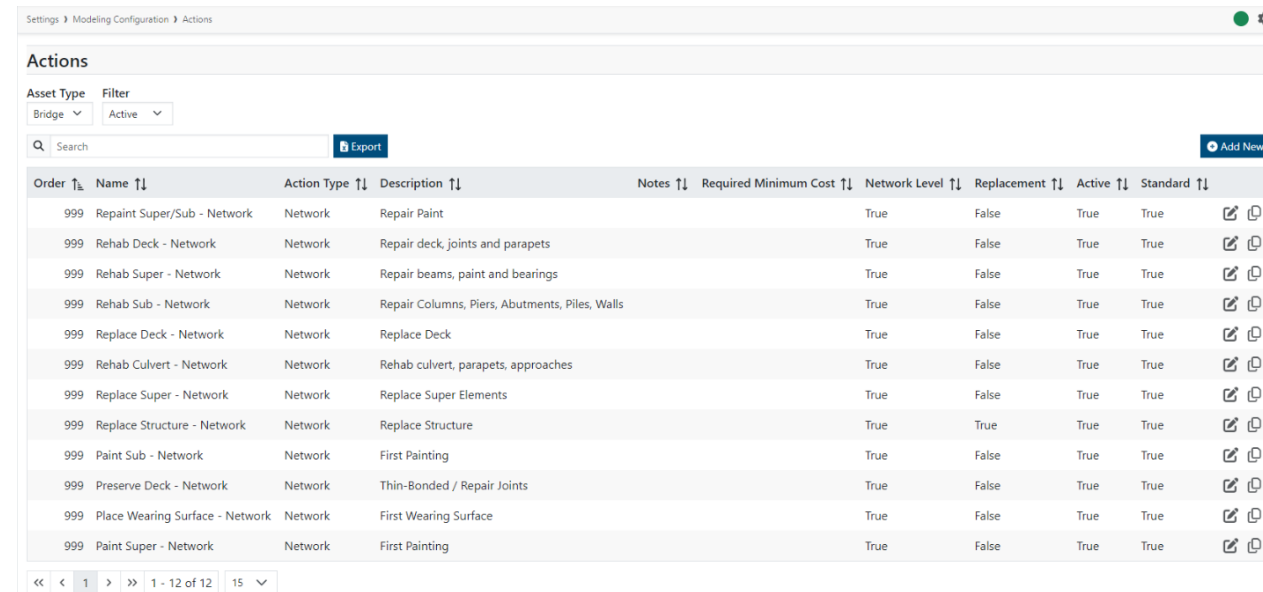
# Program Planning – Utility Tree

- Define weights of each node of tree to determine utility calculation
- Can create one overall tree but many Weight Profile variations



# Program Planning – Actions & Benefits

- Benefits
  - Define the effects on a bridge
  - Tie into utility tree so that benefits affect utility calculation
- Actions
  - Define potential work for a bridge
  - Link back to benefits
- Network Actions
  - Create action decision tree for related actions

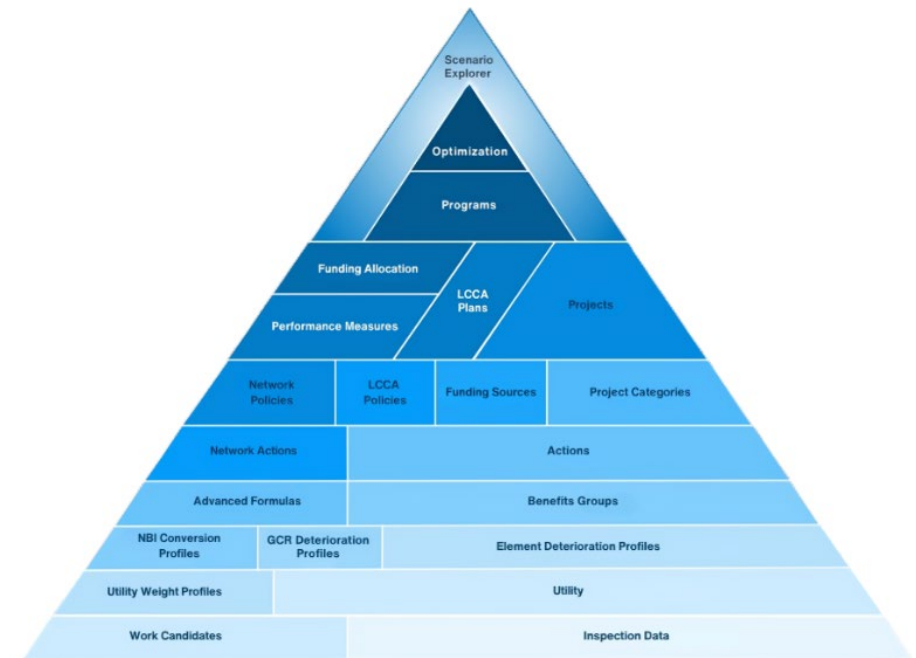


The screenshot shows a software interface for managing actions. At the top, there is a breadcrumb trail: "Settings > Modeling Configuration > Actions". Below this, the title "Actions" is displayed. There are two dropdown menus: "Asset Type" set to "Bridge" and "Filter" set to "Active". A search bar with a magnifying glass icon and the word "Search" is present, along with an "Export" button. In the top right corner, there is an "Add New" button. The main content is a table with the following columns: Order, Name, Action Type, Description, Notes, Required Minimum Cost, Network Level, Replacement, Active, and Standard. The table contains 12 rows of data, all with an "Order" of 999. Each row has a "Name" column with a hyphenated suffix (e.g., "- Network") and a "Description" column. The "Notes", "Required Minimum Cost", and "Standard" columns are empty. The "Network Level", "Replacement", and "Active" columns contain "True" or "False". Each row has a "Standard" column with a "True" value and a "Standard" column with a "True" value. At the bottom of the table, there is a pagination control showing "1 - 12 of 12" and a dropdown menu set to "15".

Order	Name	Action Type	Description	Notes	Required Minimum Cost	Network Level	Replacement	Active	Standard
999	Repaint Super/Sub - Network	Network	Repair Paint			True	False	True	True
999	Rehab Deck - Network	Network	Repair deck, joints and parapets			True	False	True	True
999	Rehab Super - Network	Network	Repair beams, paint and bearings			True	False	True	True
999	Rehab Sub - Network	Network	Repair Columns, Piers, Abutments, Piles, Walls			True	False	True	True
999	Replace Deck - Network	Network	Replace Deck			True	False	True	True
999	Rehab Culvert - Network	Network	Rehab culvert, parapets, approaches			True	False	True	True
999	Replace Super - Network	Network	Replace Super Elements			True	False	True	True
999	Replace Structure - Network	Network	Replace Structure			True	True	True	True
999	Paint Sub - Network	Network	First Painting			True	False	True	True
999	Preserve Deck - Network	Network	Thin-Bonded / Repair Joints			True	False	True	True
999	Place Wearing Surface - Network	Network	First Wearing Surface			True	False	True	True
999	Paint Super - Network	Network	First Painting			True	False	True	True

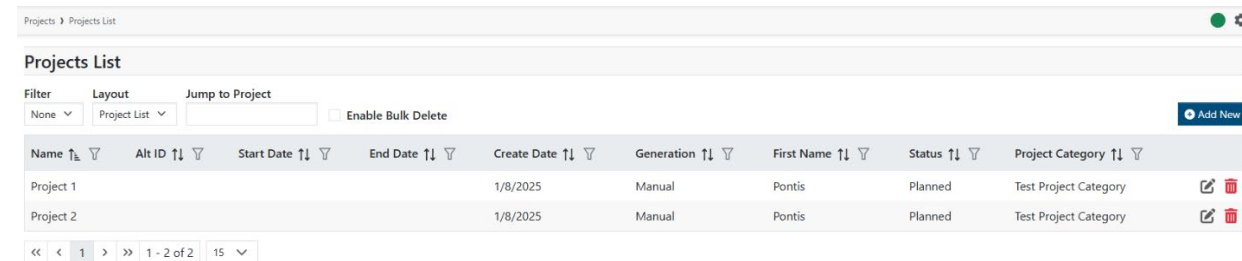
# Program Planning – Deterioration

- GCR Deterioration Profiles
  - Indicate how general condition ratings deteriorate over time
  - Define overall for program or assign to individual bridges
- NBI Conversion Profiles
  - Indicate how element condition data is converted to overall condition ratings
  - Define overall for program or assign to individual bridges
- Element Deterioration Profiles
  - Indicate how element condition states deteriorate over time
  - Define overall for program & make alternates to see effects



# Program Planning – Projects





- Include bridges & the work being done to each bridge
- Can track project status through completion
- Can respect existing projects & their benefits when considering future work



Projects > Projects List

Projects List

Filter: None | Layout: Project List | Jump to Project:  | Enable Bulk Delete:  | Add New

Name	Alt ID	Start Date	End Date	Create Date	Generation	First Name	Status	Project Category	
Project 1				1/8/2025	Manual	Pontis	Planned	Test Project Category	 
Project 2				1/8/2025	Manual	Pontis	Planned	Test Project Category	 

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# Program Planning – Performance Measures

- Define criteria used to evaluate a program & displayed in results

Programs > Performance Measures

### Performance Measures

Program: Program 2 Scenario: Default

[Add New](#)

Name ↑	Best Value ↑↓	Worst Value ↑↓	
Health Index	100	0	
Utility (Deck Rating)	100	0	

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### Performance Constraints by Subdivision

Name ↑	Health Index Minimum ↑↓	Health Index Target ↑↓	Minimum Utility (Deck Rating) ↑↓	Target Utility (Deck Rating) ↑↓	
N Non-NHS					
Y NHS					

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# Program Planning – Programs

- Define program conditions (modeling configuration settings)
- Assign existing projects to program

The screenshot shows a web-based interface for creating a program. At the top, there is a breadcrumb trail: "Programs > Program List". Below this is a header "Create Program". A "Validation Messages" section contains a warning icon and the text: "The Program does not have any Network Policies associated to it. At least one Network Policy must be added to the Program in order to add it to the optimization queue." Below the validation messages are two tabs: "Details" and "Configuration", with "Configuration" selected. The form fields include: "Name" (text input), "Program Status" (dropdown menu with "Planned" selected), "Structure Weights Formula" (dropdown menu with "Undefined" selected), "Program Start Year" (dropdown menu with "Undefined" selected), "Program End Year" (dropdown menu with "Undefined" selected), "Required Minimum Cost" (text input), "Bridge Filter" (dropdown menu with "Undefined" selected), and "Description" (text area).

# Program Planning – Funding Allocation

- Define funding sources
- Take into account allocated funds
- Subdivide funding

The screenshot displays the 'Funding Allocation' interface. It includes a 'Funding Source' section with an 'Add New' button and a search bar. Below is a 'Budget Distribution' section with a table showing values for years 2025 through 2033. The table includes rows for 'Funding Source Funds', 'Additional Funds', 'Total Annual Budget', 'Allocated Funds', and 'Available Funds'. Below the table are options for 'Subdivide by Project Category' and 'Input Method'. At the bottom, there is a 'Subdivision' table with columns for 'Health Index', 'Utility', 'Total Budget per Subdivision', '% Overall Budget', and years 2025 through 2030.

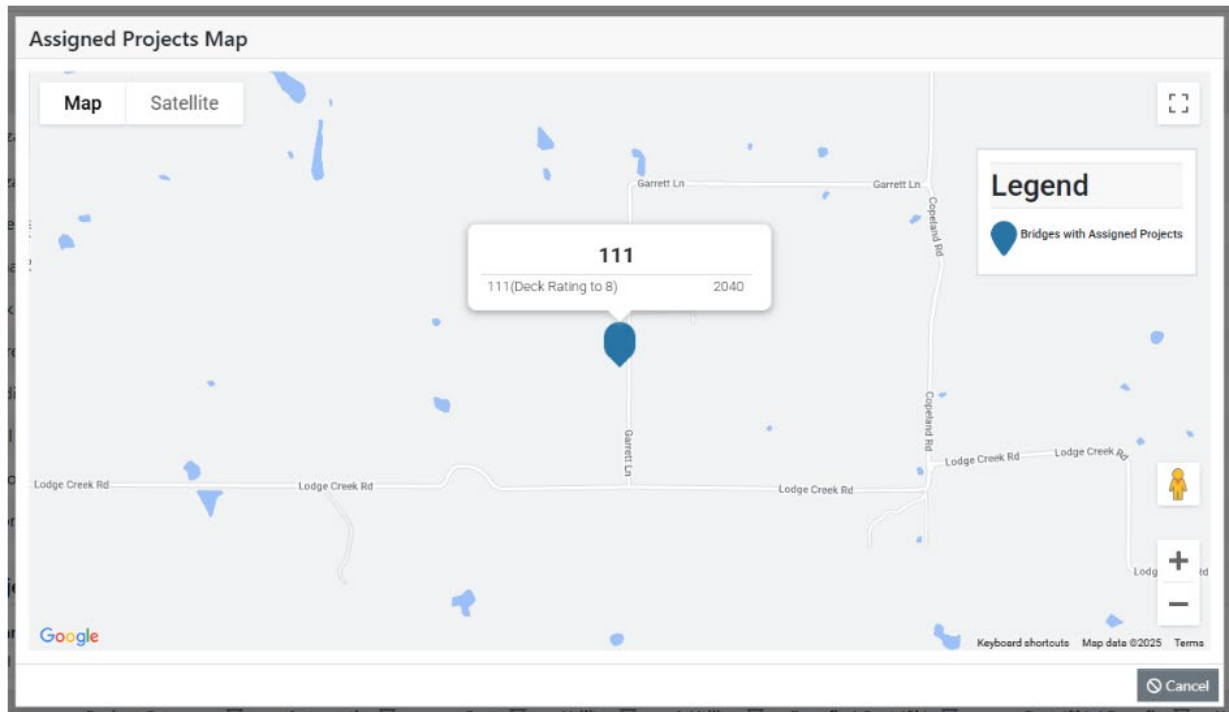
	2025	2026	2027	2028	2029	2030	2031	2032	2033
Funding Source Funds	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Additional Funds	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Total Annual Budget	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Allocated Funds	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Available Funds	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Subdivision	Health Index	Utility	Total Budget per Subdivision	% Overall Budget	2025	2026	2027	2028	2029	2030
All			\$0.00	NaN %	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Total			\$0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

# Program Planning – Optimization

- Returns a list of recommended projects / bridges to meet specified goals
- Can be viewed on map



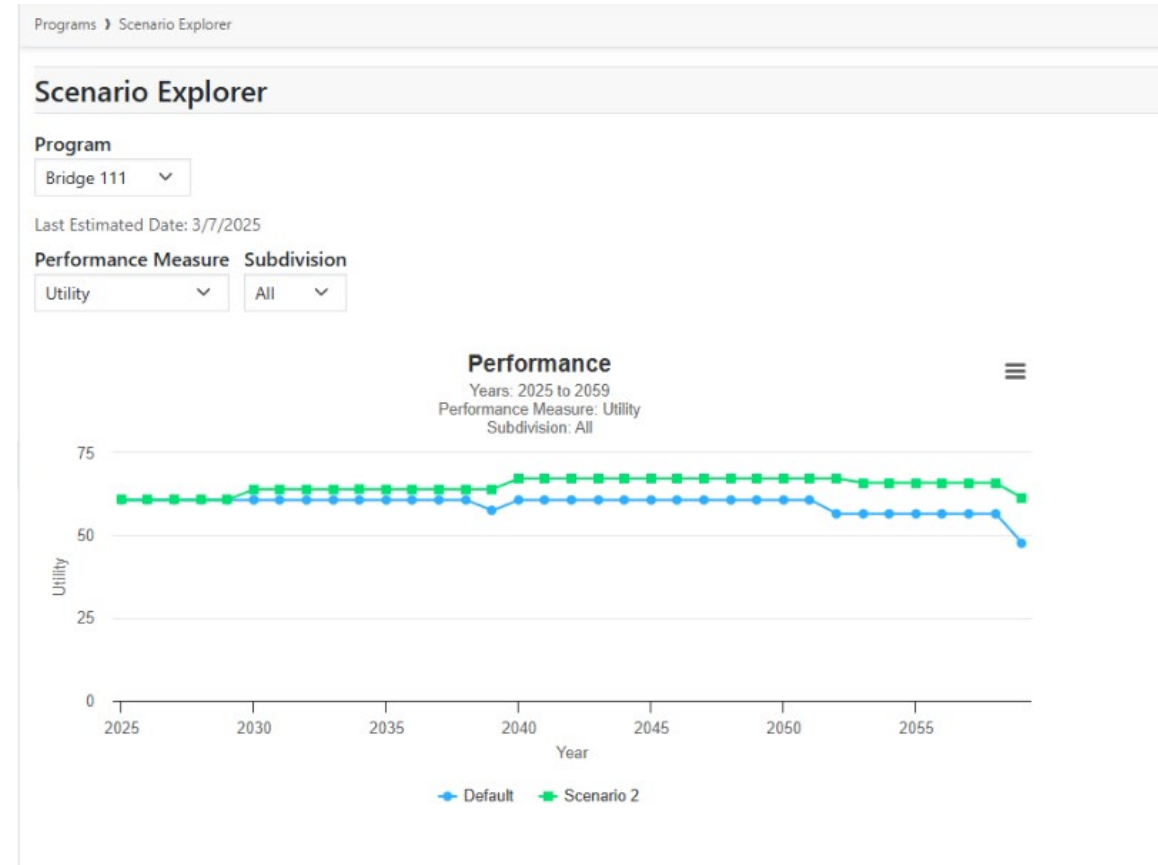
# Program Planning – Results

- Review graphs based on performance measures
- Agency can configure additional graphs



# Program Planning – Scenario Explorer

- Compare different scenarios for same program
  - Funding
  - Existing projects
  - Performance measures
  - Deterioration type



# Program Planning – Program Comparison

- Compare recommended work for two programs

The screenshot displays the 'Program Comparison' tool interface. At the top, there are dropdown menus for 'Program 1', 'Program 2', 'Scenario 1', and 'Scenario 2'. Below these are tabs for 'Comparison Data' and 'Comparison Chart'. The main content area is divided into four sections, each with an 'Export' button:

- Same in Both Programs:** A table with columns: Project Name, Category, Automatic, Cost (\$), Utility, Δ Utility, Benefit / Cost (\$k), Cost (\$k) / Benefit, Year, Frozen, and Status. It lists three projects: 111(Super Rating to 8), 111(Deck Rating to 8), and 111(Sub Rating to 8).
- Same Bridge & Work, Different Years:** A table with columns: Year in Program 1, Year in Program 2, Cost in Program 1 (\$), Cost in Program 2 (\$), Benefit / Cost (\$k) in Program 1, Benefit / Cost (\$k) in Program 2, and Cost (\$k) / Benefit. It shows data for the years 2027 and 2026.
- Same Structure, Different Work:** A table with columns: Bridge ID, Year, Work in Program 1, Category 1, Work in Program 2, Category 2, and Automatic. It shows data for Bridge ID 444 in 2031.
- Unique to Program 1:** A table with the same columns as the 'Same in Both Programs' section. It lists two projects: 222(Super Rating to 8) and 222(Deck Rating to 8).

# Questions?

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