BrM 5.2.3 Training

User Group Walkthrough Example

September 20-21, 2016

San Antonio, Texas

BrM Help Desk

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JIRA tickets: bridgeware.atlassian.net

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BrM Solutions Consultant

Zac.Boyle@Bentley.com

Or add ‘@ZacBoyle’ to your JIRA tickets

Today

3:30 5.2.3 Walk Through

- User Interface
- Visual Forms Editor
- Actions and Benefits
- Network Policies

Tomorrow

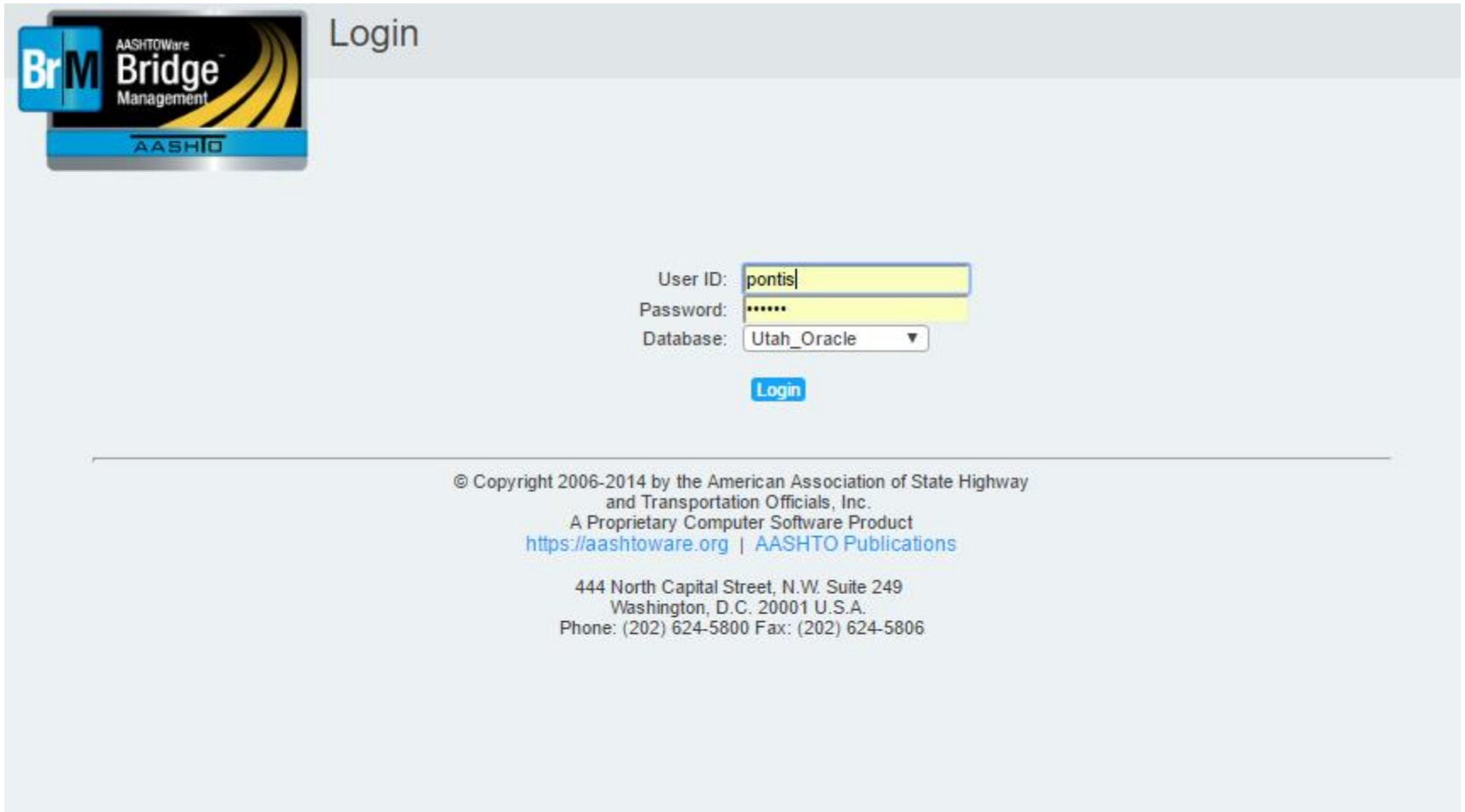
8:10 5.2.3 Walk Through (continued)

- Performance Measures
- Funding Allocation
- Program Results

9:30 Break

- Executive Summary
- Scenario Explorer

The New User Interface



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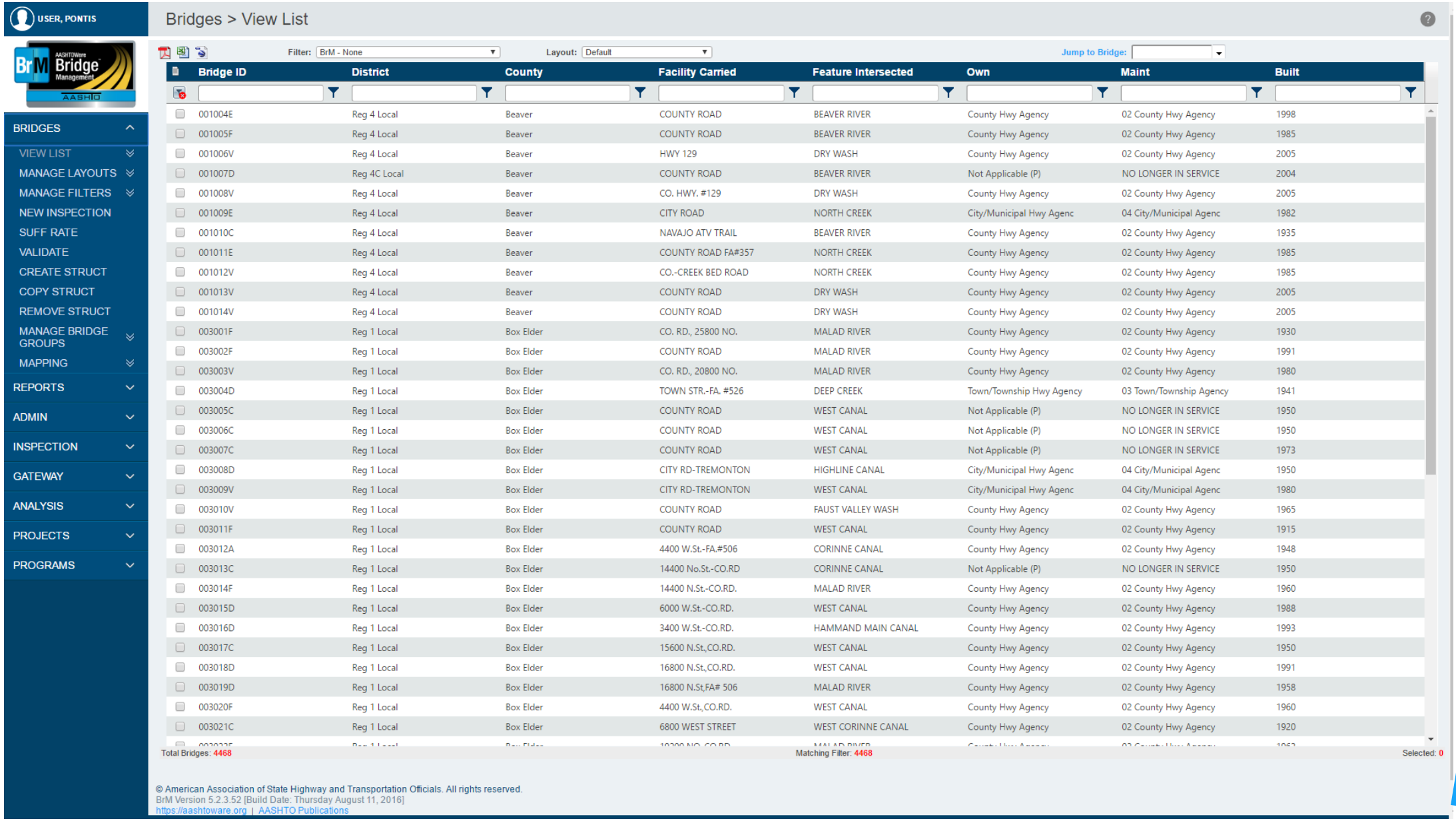

The New User Interface

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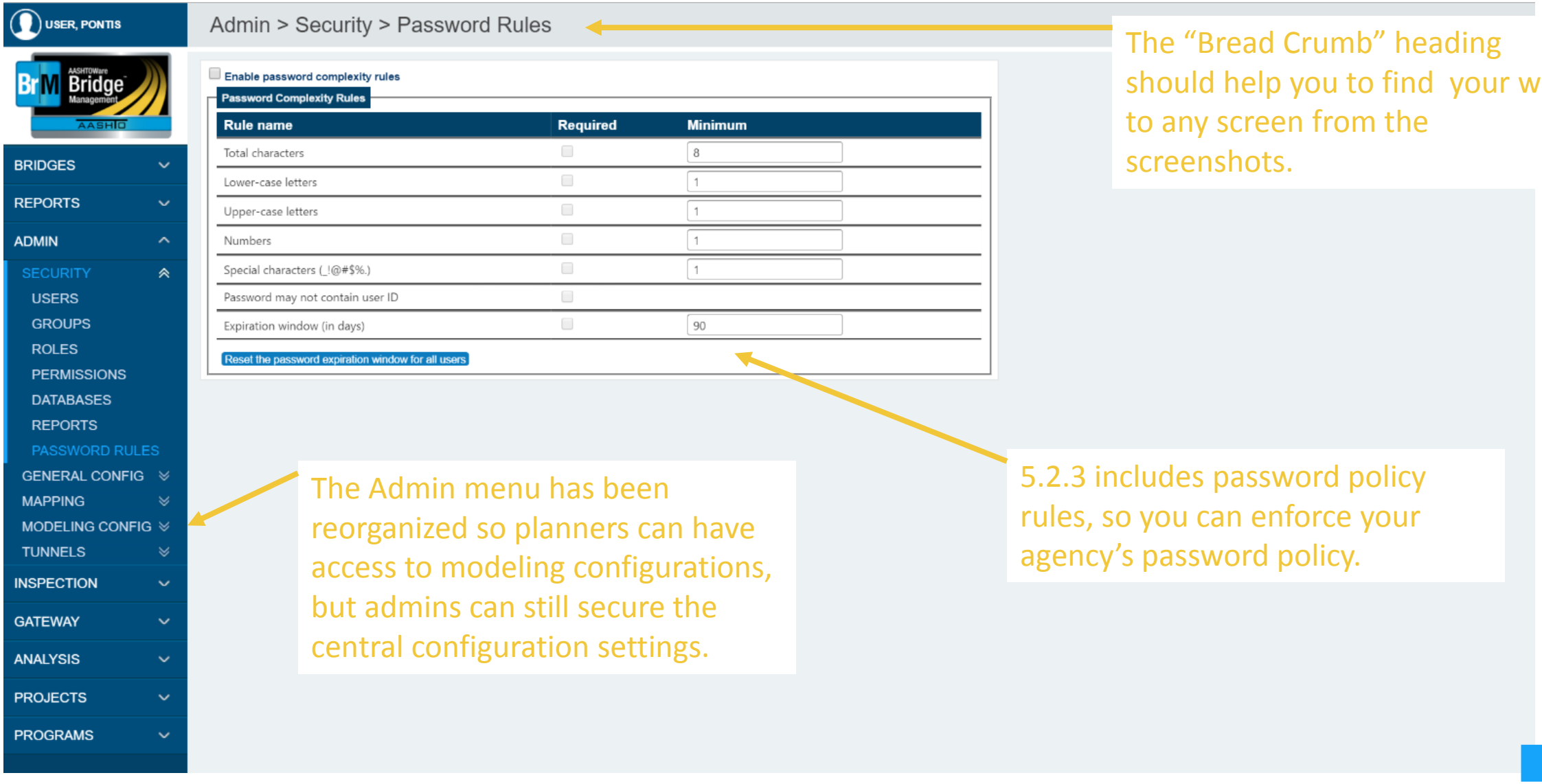


The "Bread Crumb" heading should help you to find your way to any screen from the screenshots.

The Admin menu has been reorganized so planners can have access to modeling configurations, but admins can still secure the central configuration settings.

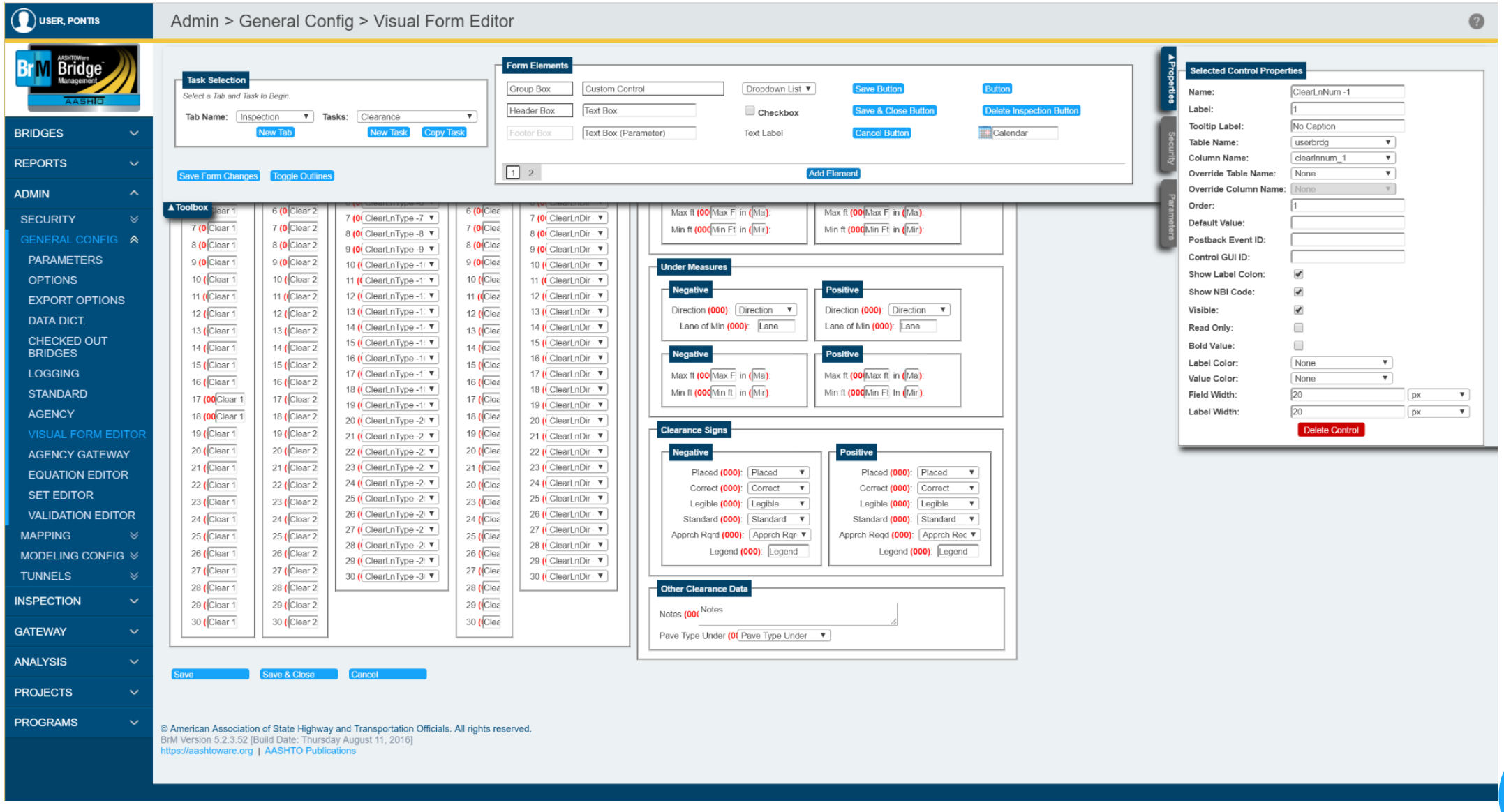
5.2.3 includes password policy rules, so you can enforce your agency's password policy.

BrM 5.2.3 Training

Visual Forms Editor

8

Visual Forms Editor



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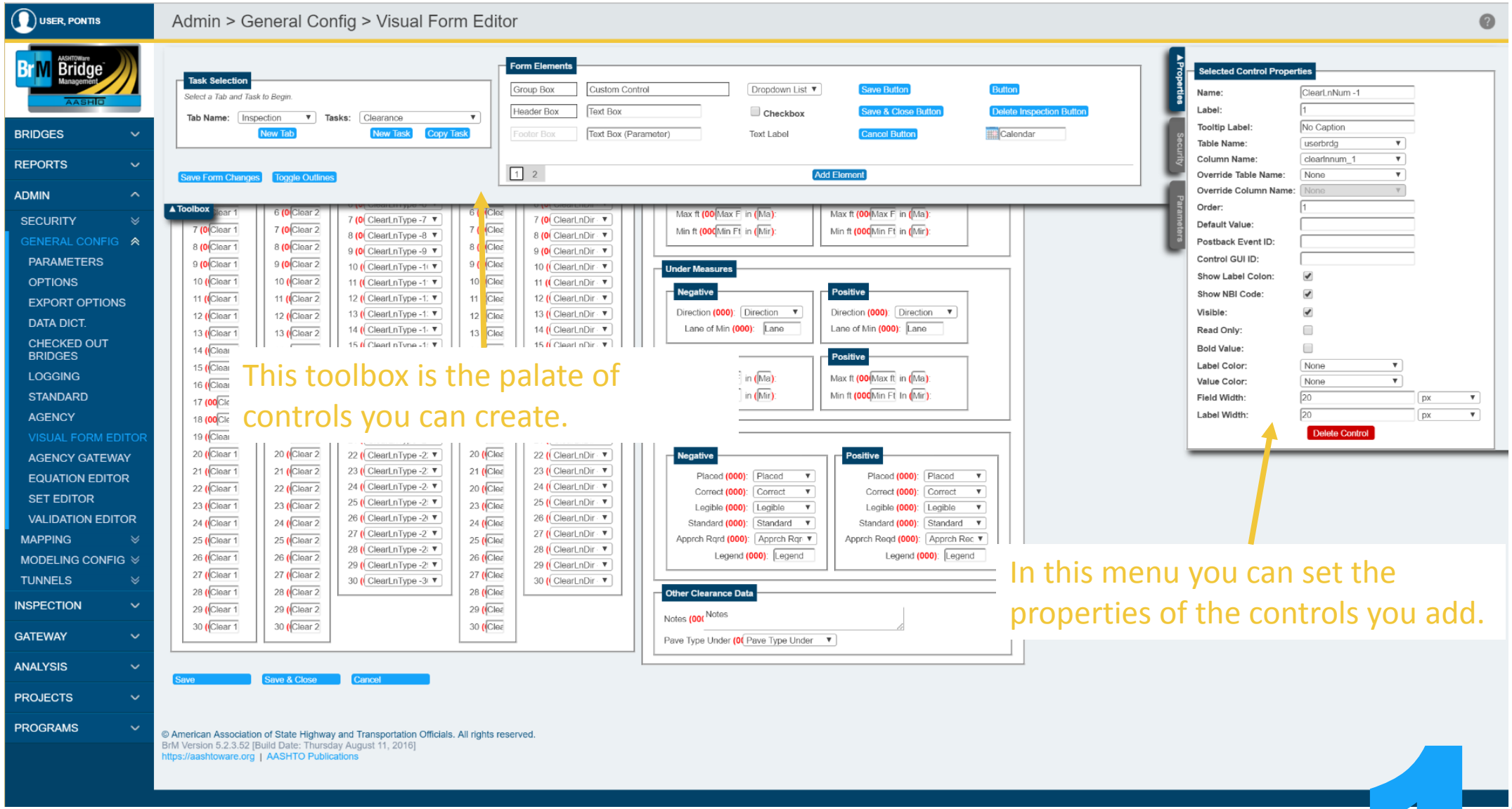

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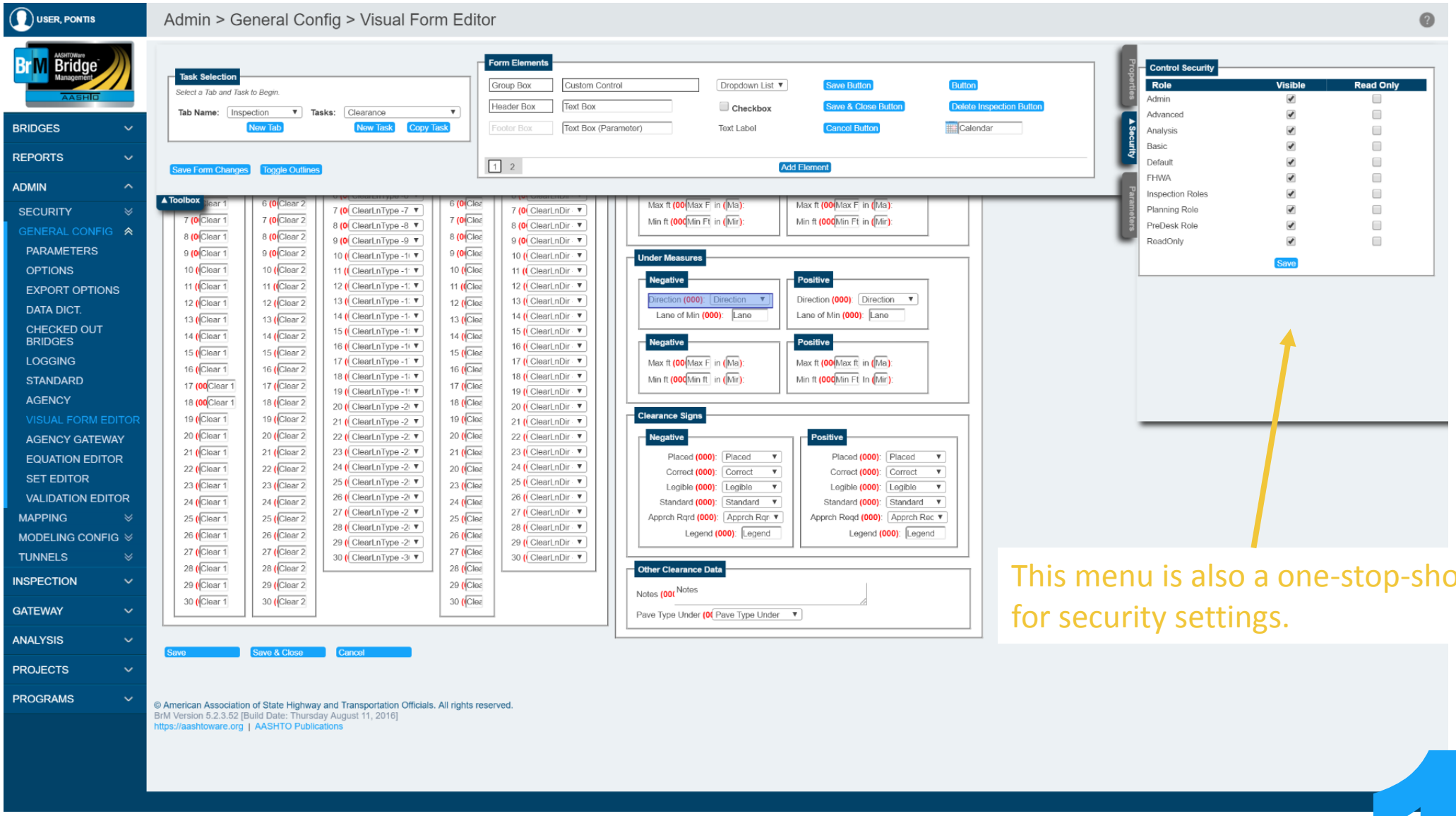

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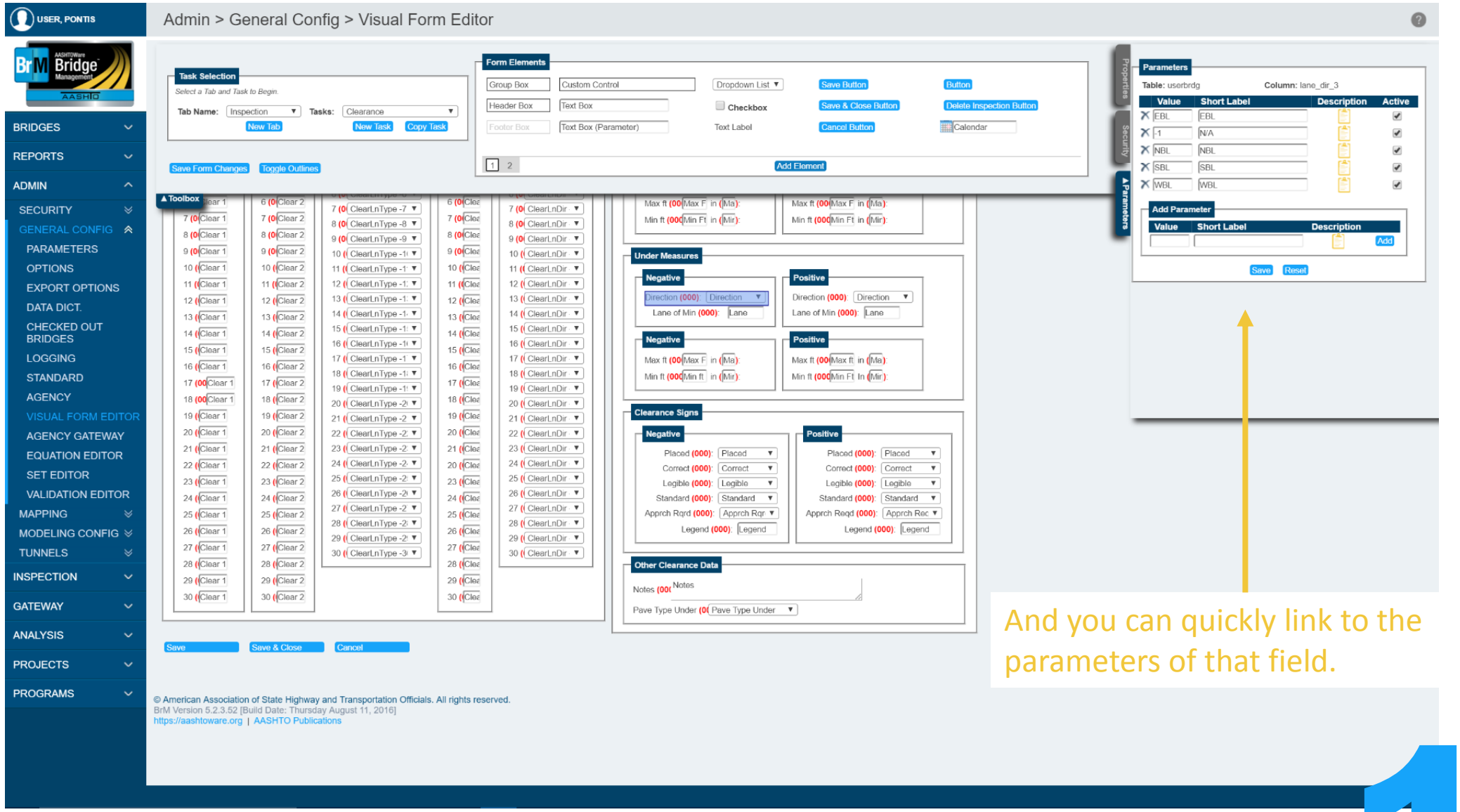

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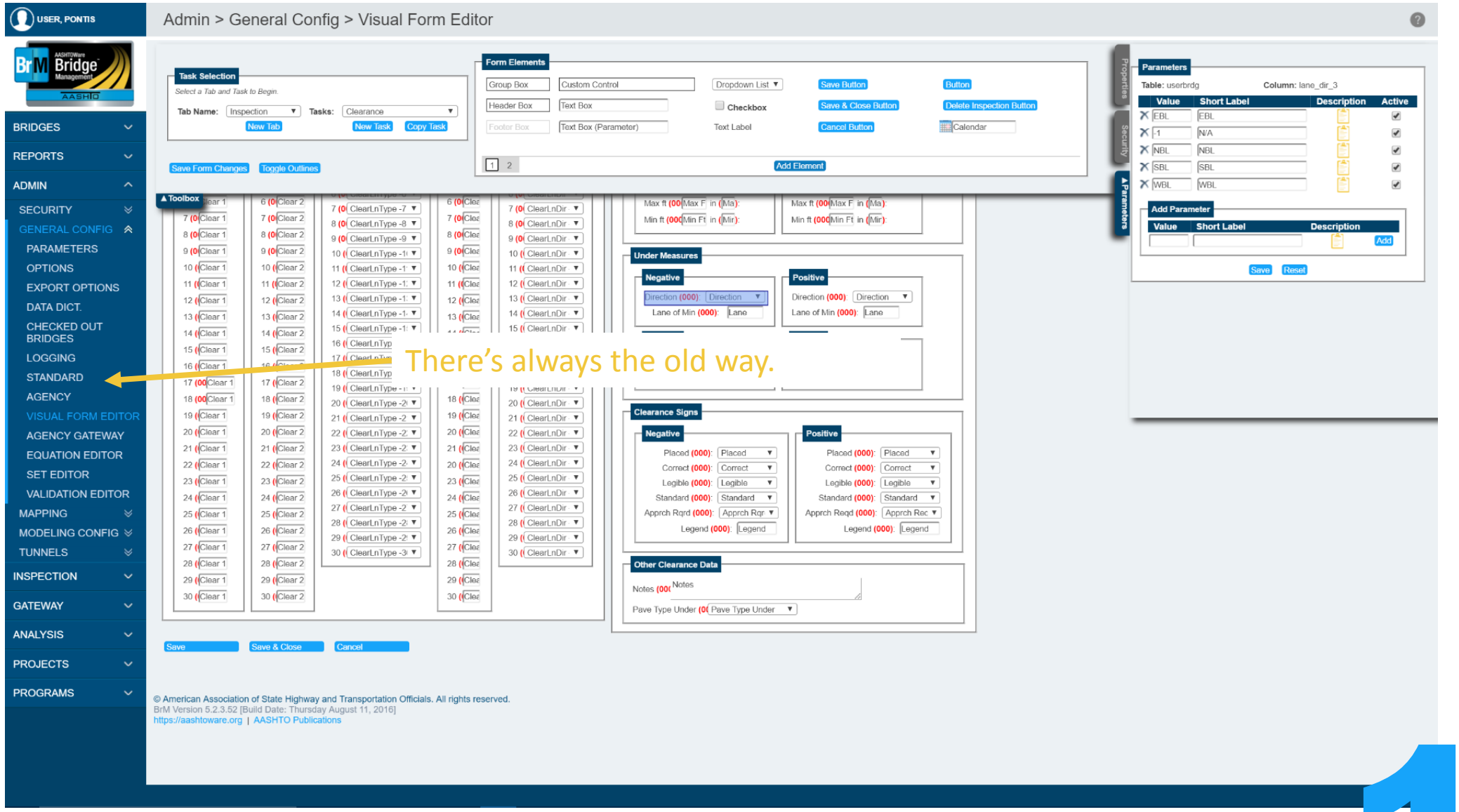

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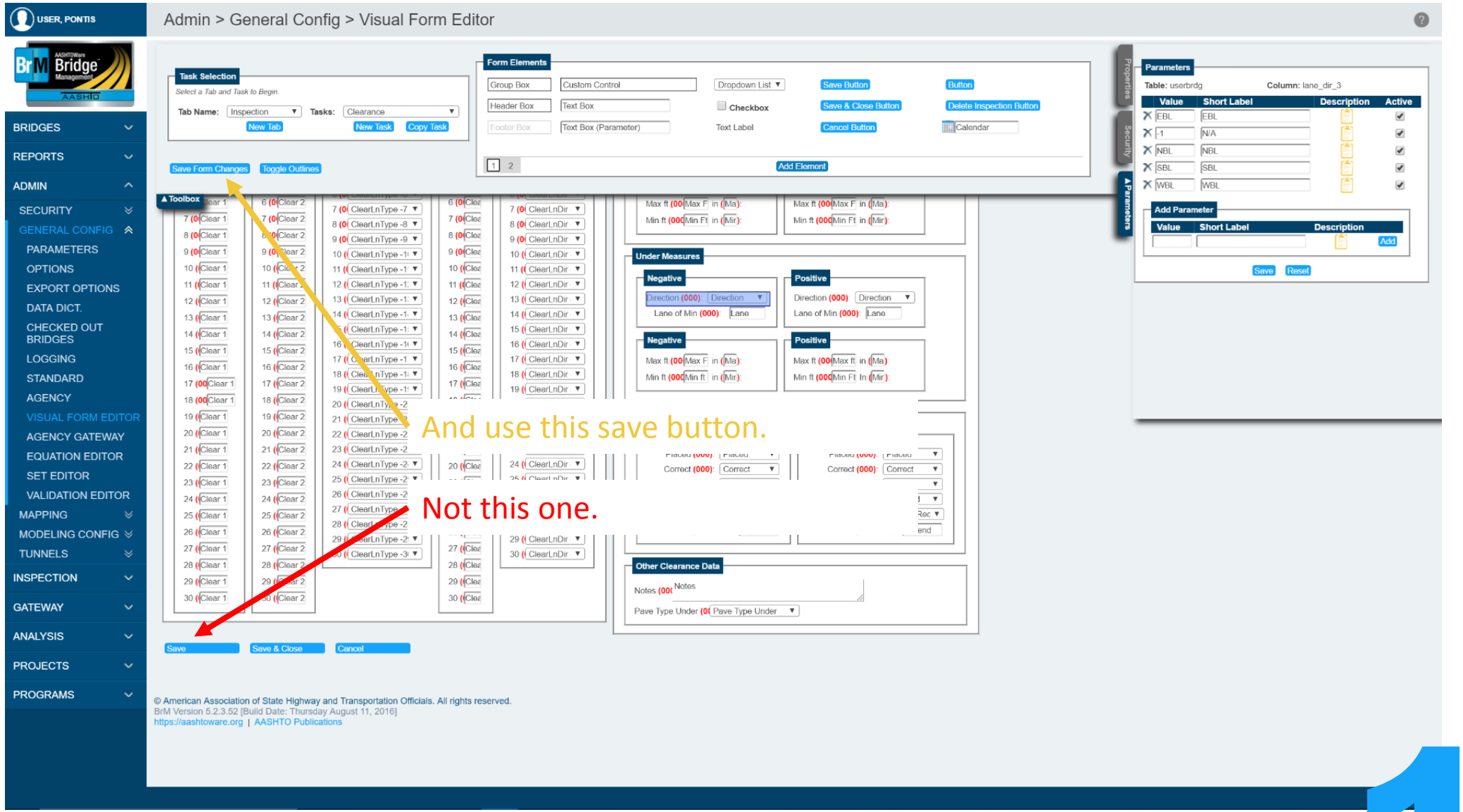
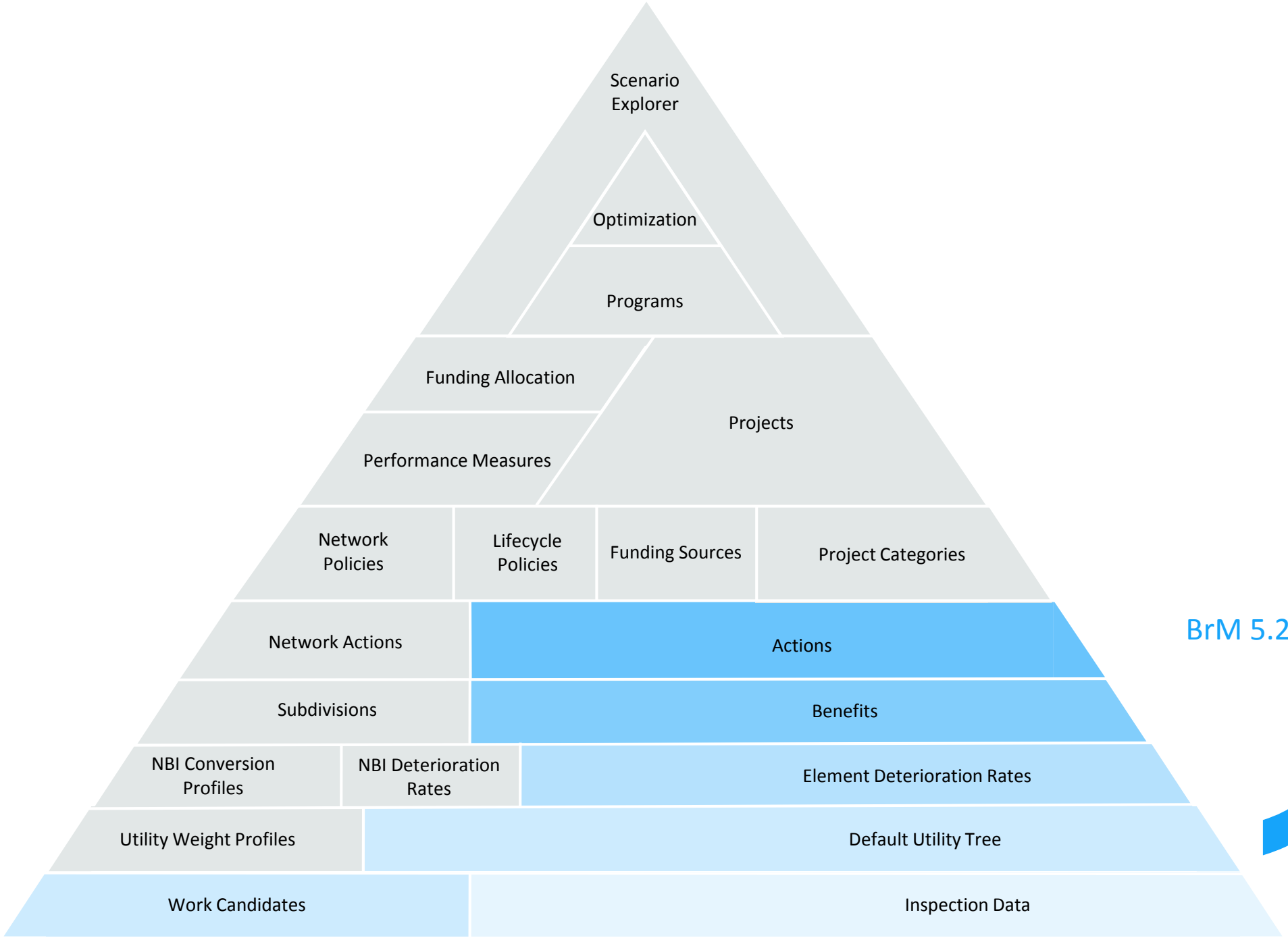


BrM 5.2.3 Training

Optimization Example

15


Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
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Utility Weight Profiles
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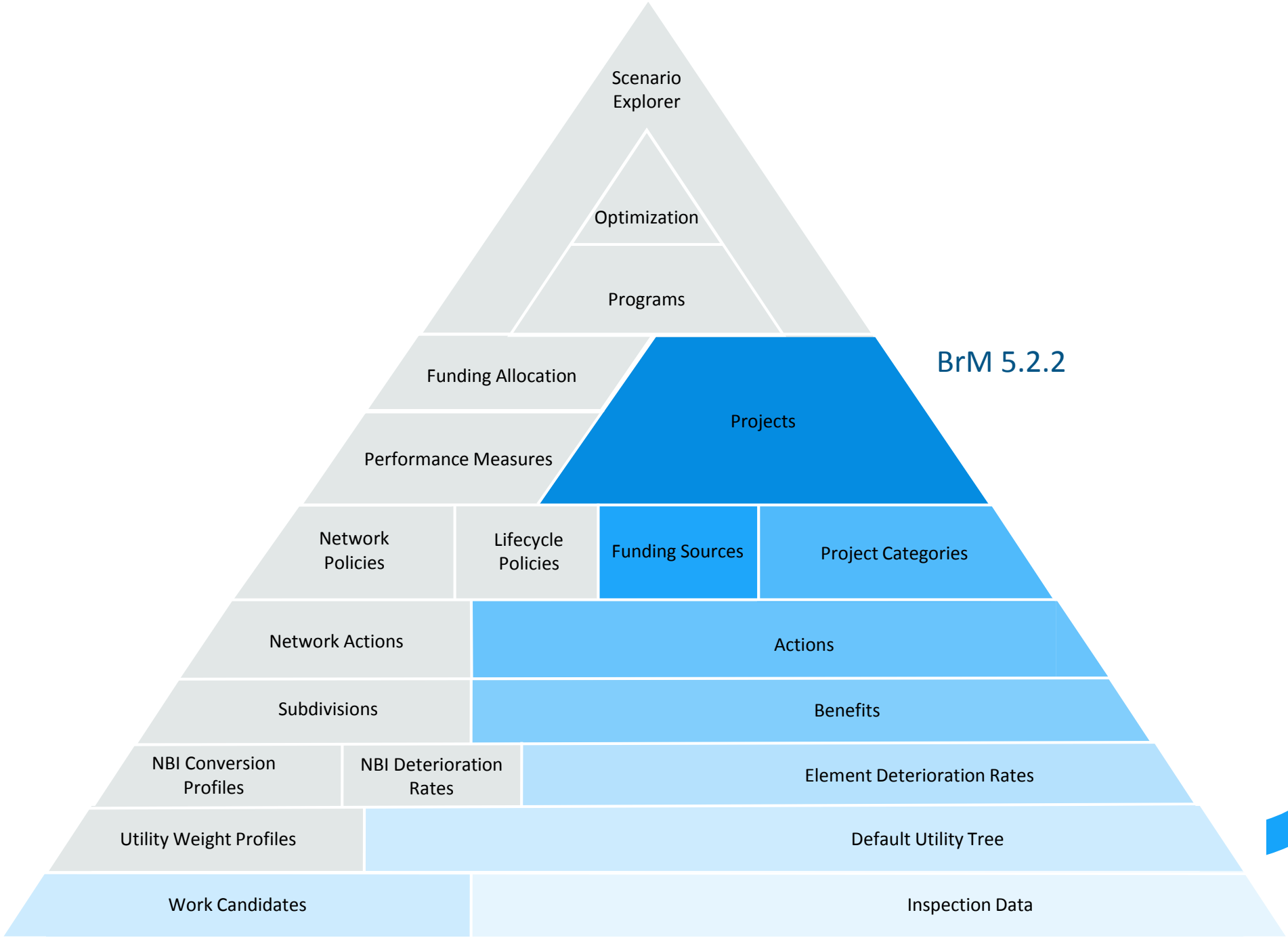
BrM 5.2.1


Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
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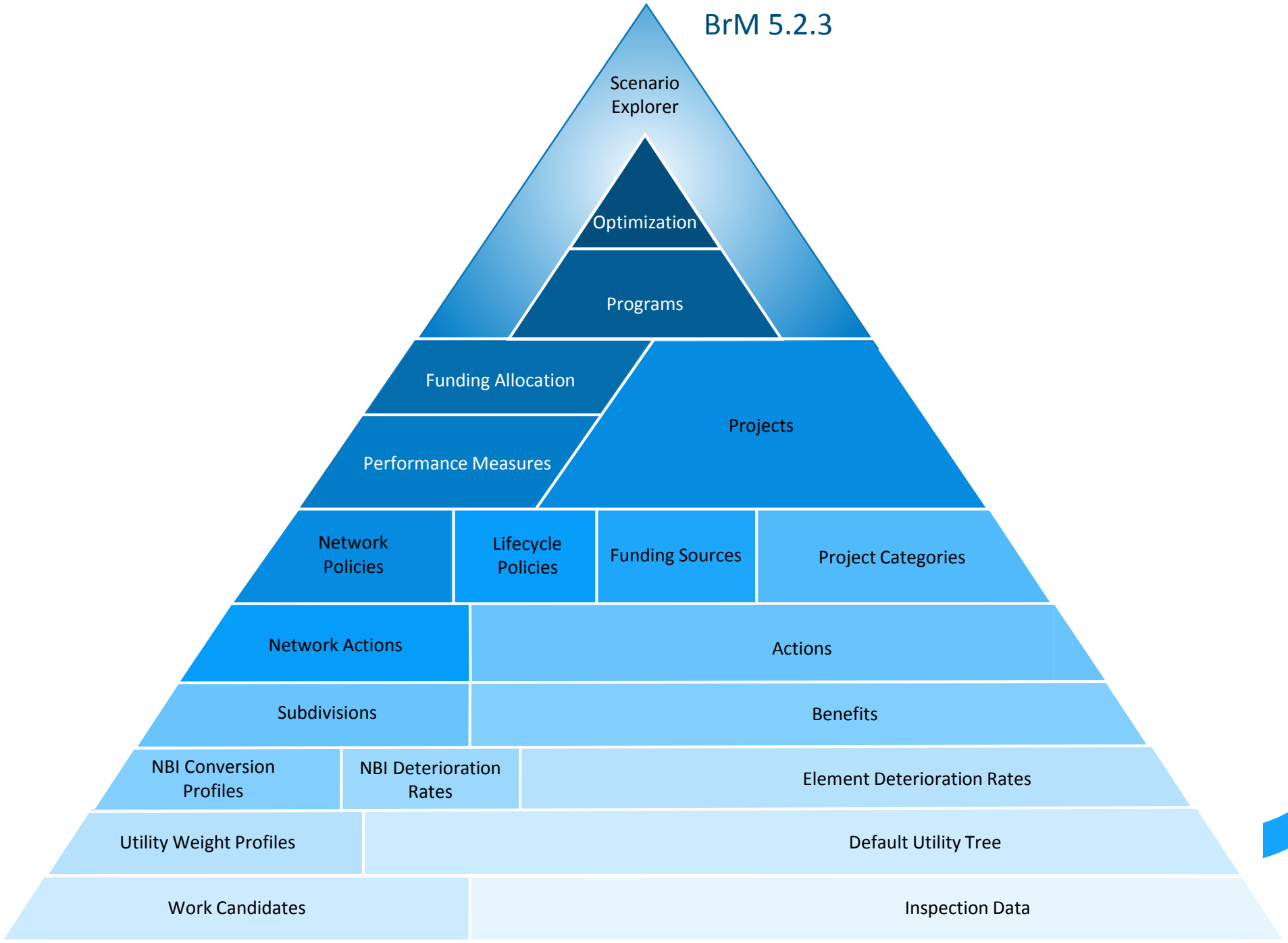
BrM 5.2.2

BrM 5.2.3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Optimization
Programs
Funding Allocation
Performance Measures
Projects
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
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NBI Deterioration Rates
Element Deterioration Rates
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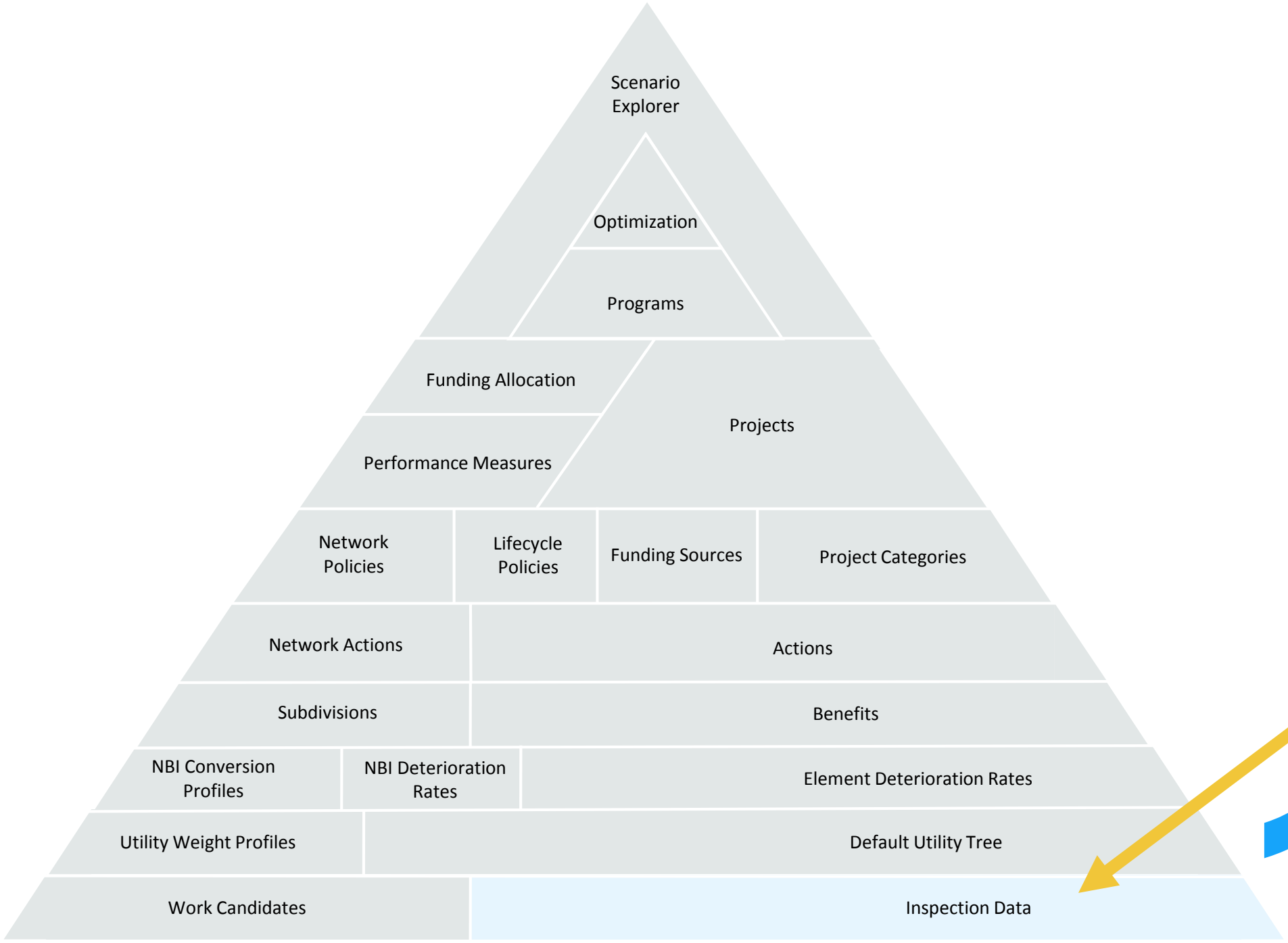
Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
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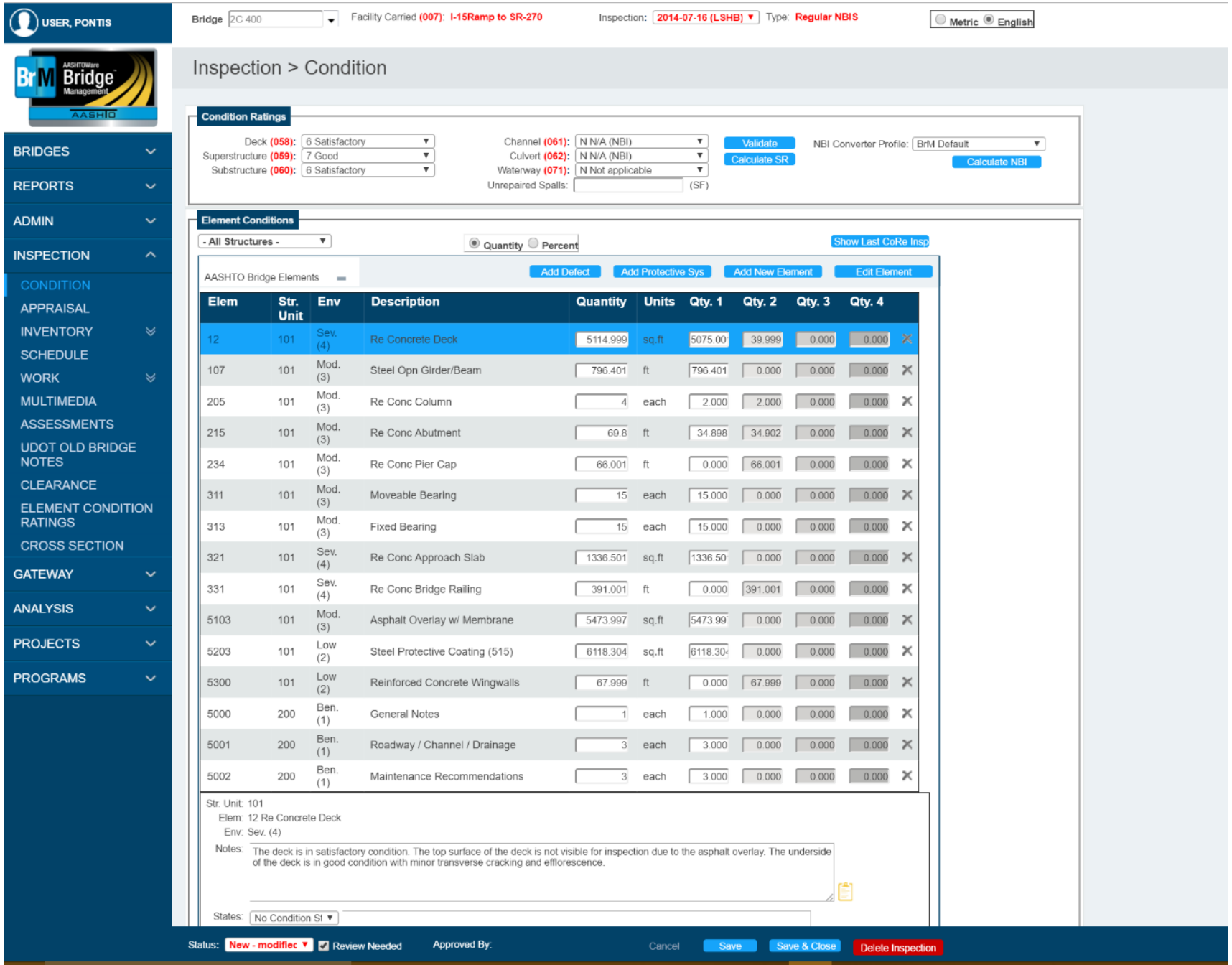

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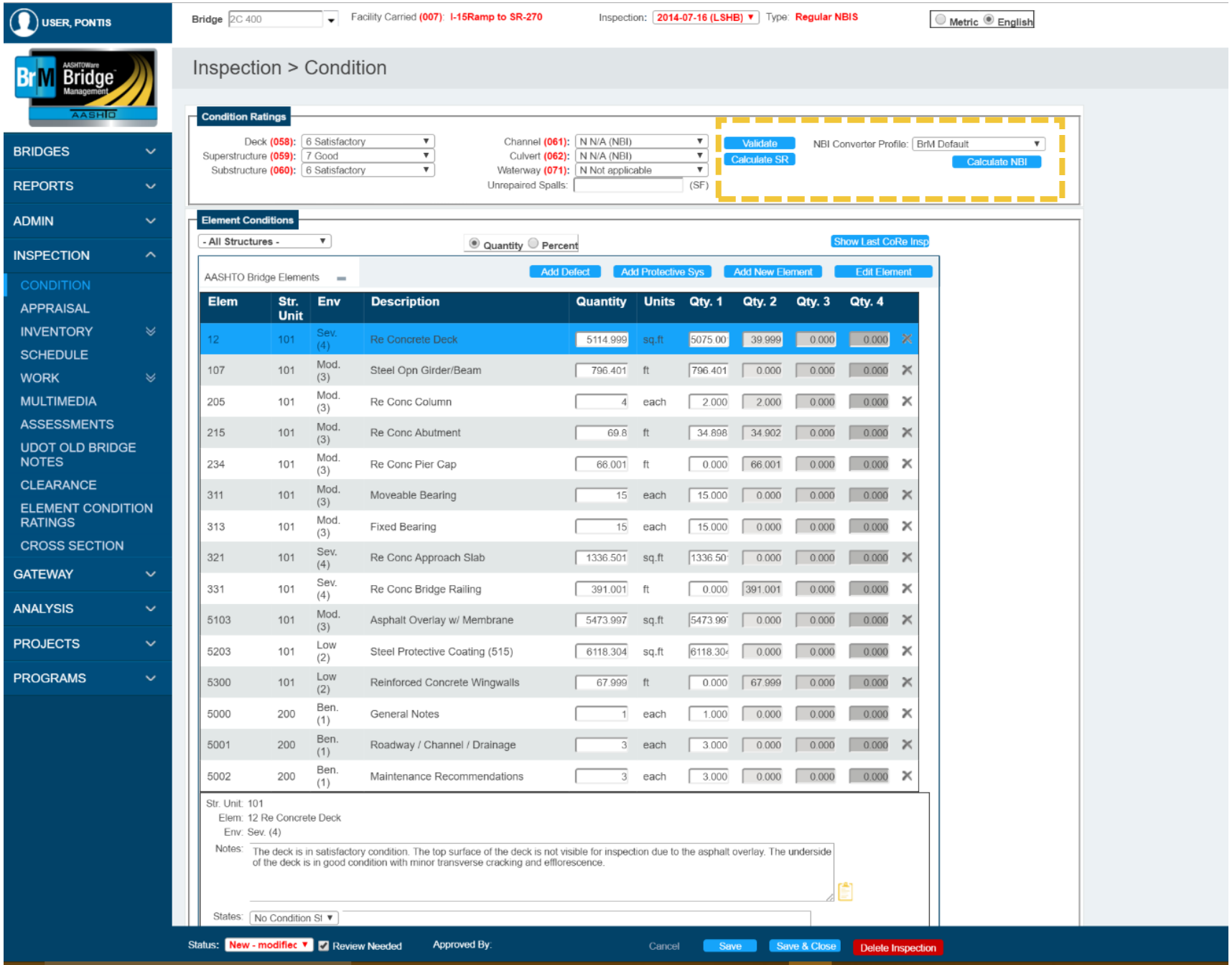

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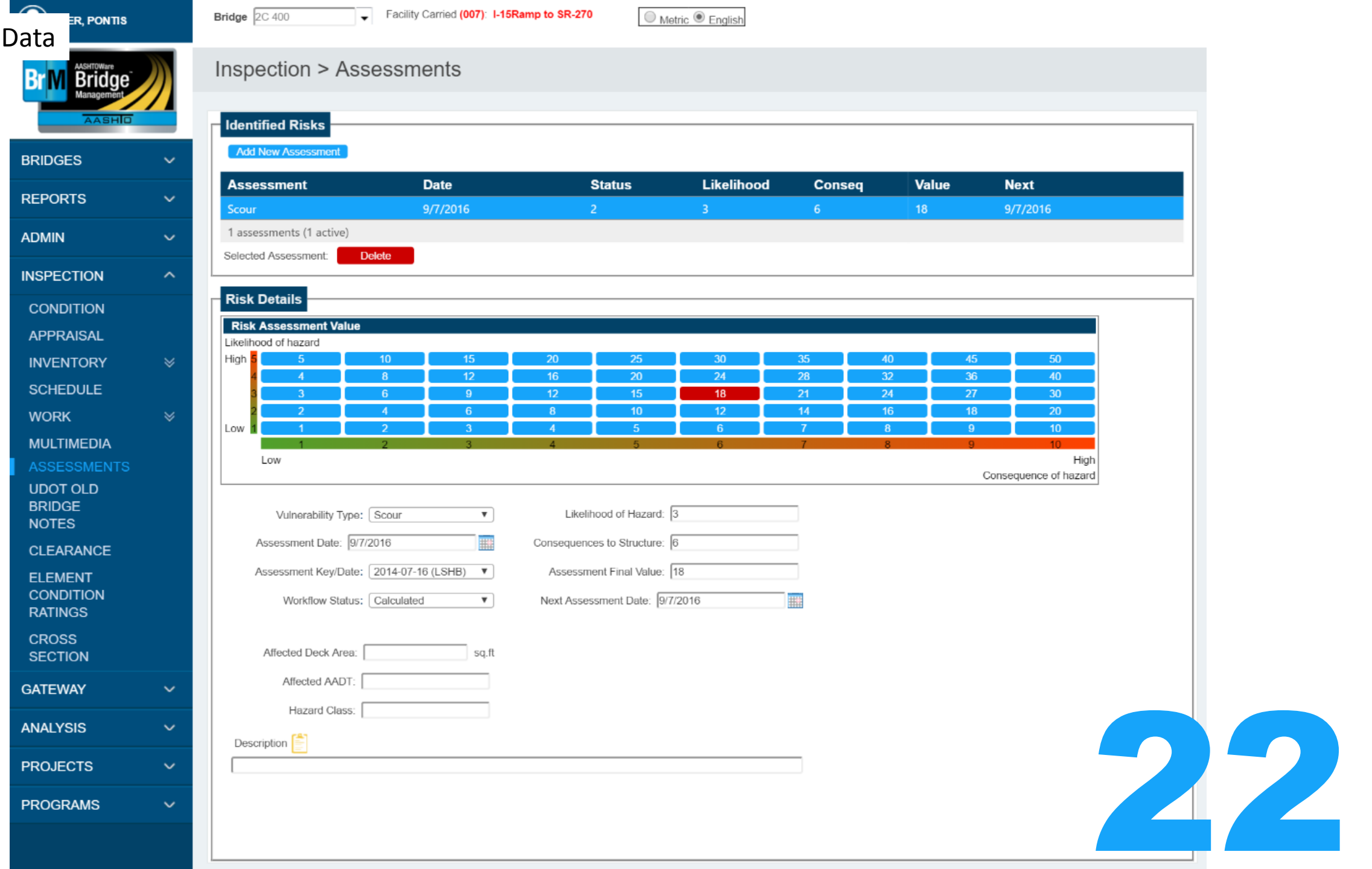

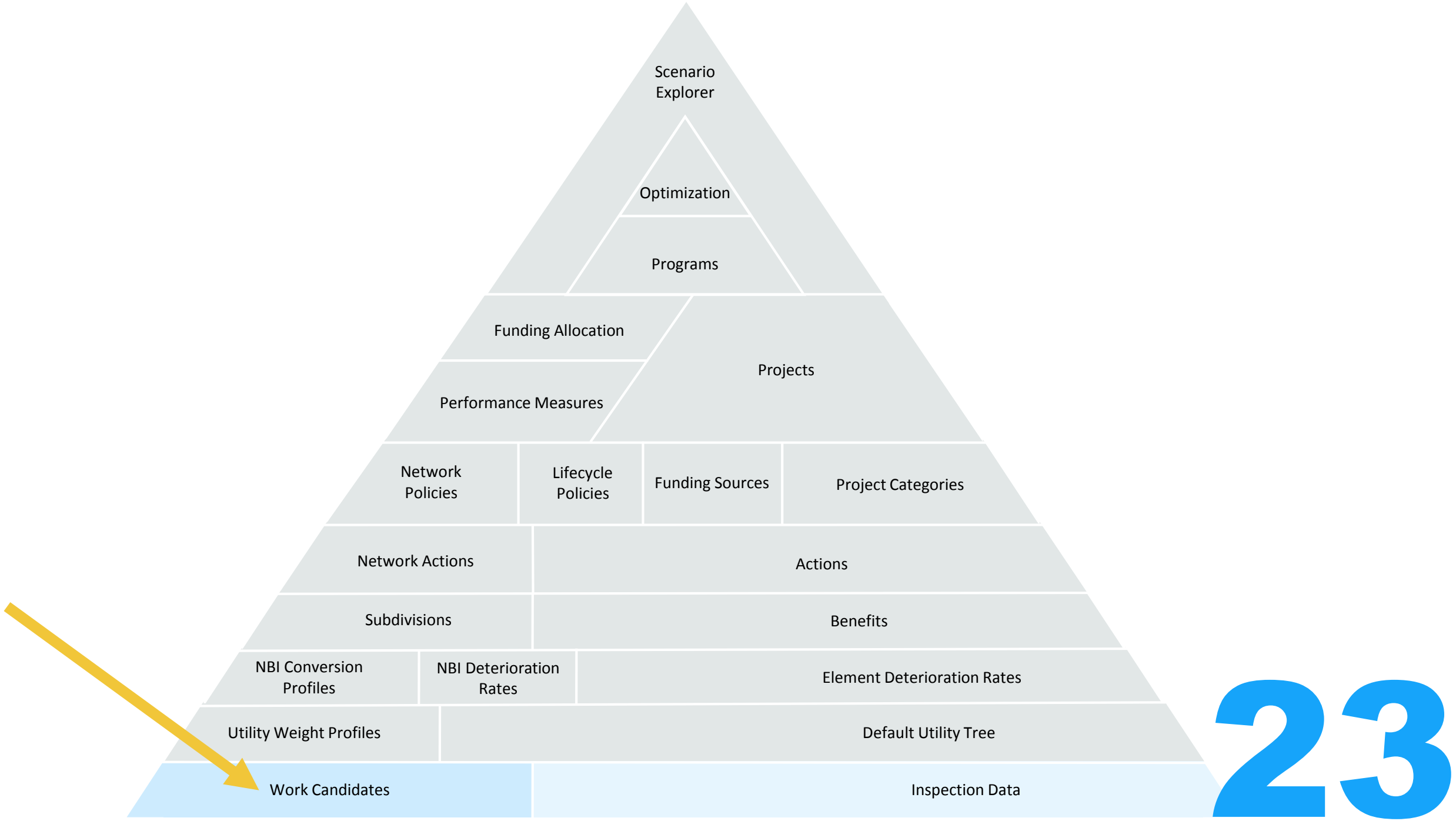
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Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
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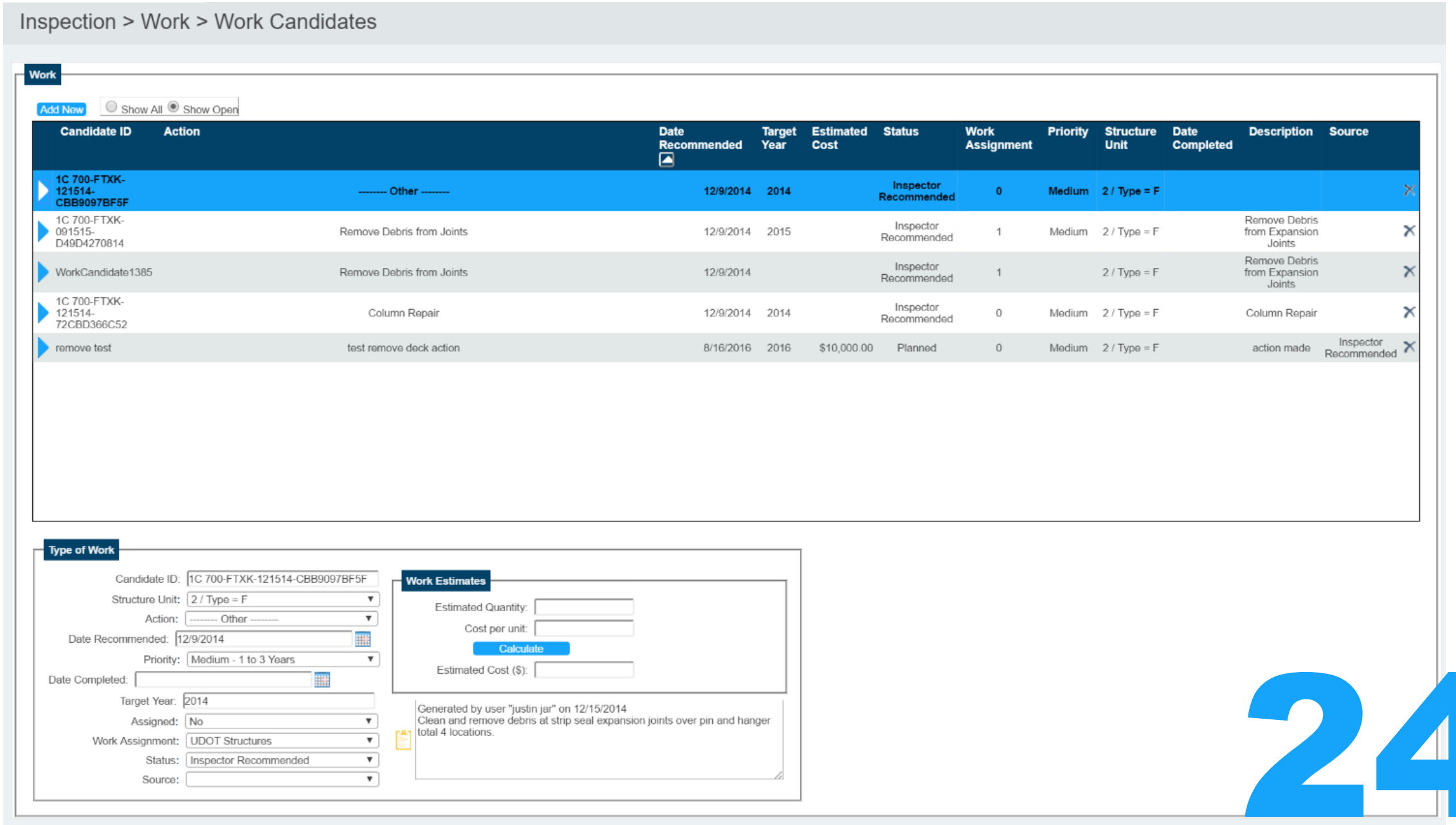


Work Candidates

UTILITY VALUE
LCCA
PROJECTS
PROGRAMS

Analysis > Work Candidates > Bridge Analysis

Sel.	Work Candidate	Action	Base Utility	Utility (Change)	Condition (Change)	LifeCycle (Change)	Mobility (Change)	Risk (Change)	Cost	Benefit / Cost ($k)	Cost ($k) / Benefit	Target Year	Repeat Interval
	Selected Work Candidates		80.32	81.05 (0.73)	66.05 (1.82)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$40,000	.0183	$55	2025	
☑	1C 700-FTXK-121514-72CBD366C52	Column Repair	80.32	81.05 (0.73)	66.05 (1.82)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$40,000	.0183	$55	2025	
☐	WorkCandidate1385	Remove Debris from Joints	83.74	83.74 (0.00)	72.78 (0.00)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$0			2016	
☐	1C 700-FTXK-091515-D49D4270814	Remove Debris from Joints	84.19	84.19 (0.00)	73.92 (0.00)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$0			2015	
☐	1C 700-FTXK-121514-CBB9097BF5F	-------- Other --------	83.74	83.74 (0.00)	72.78 (0.00)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$0			2016	
☐	remove test	test remove deck action	83.74	83.74 (0.00)	72.78 (0.00)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$10,000			2016	

1 Page size: 10 5 items in 1 pages

Add to New Project | Add New Group

Charts

General Chart

Bridge Health Index

Element Chart

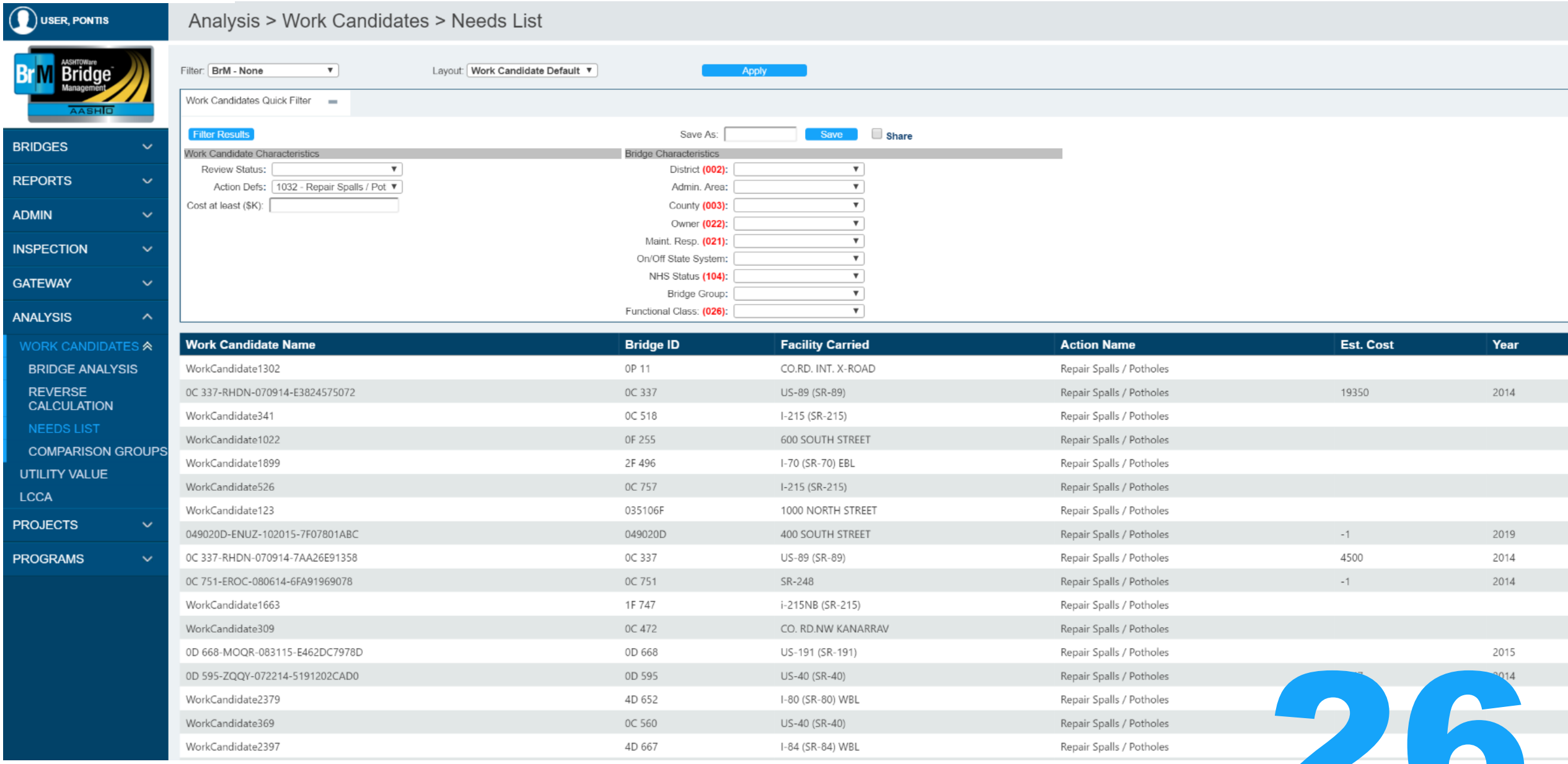
Effects on Each Element

Year: 2025 (10 years after inspection)

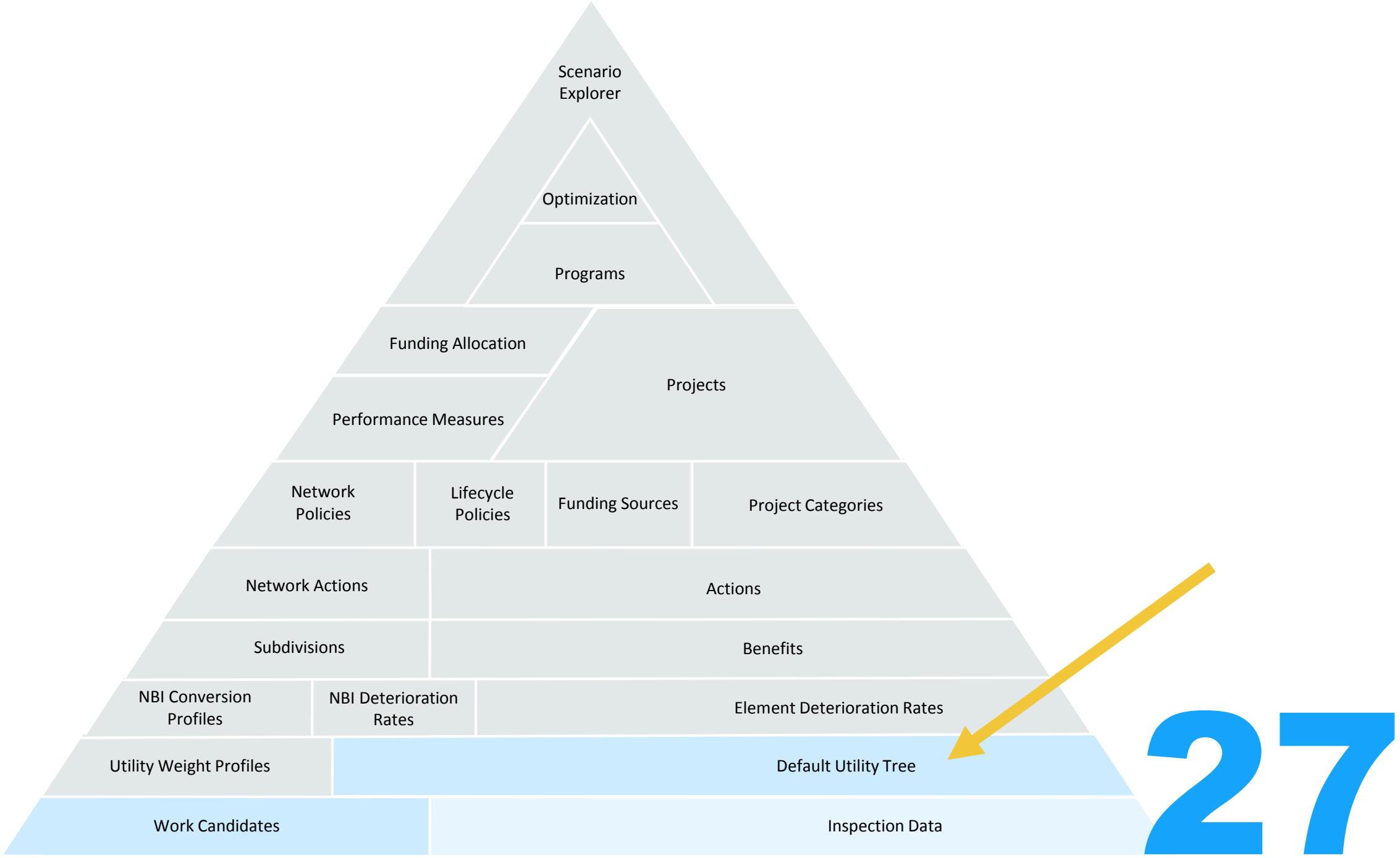
Show Changed: ☐

Element	Str. Unit	Env.	Quantity	Units	Condition	Effect
(12) Re Concrete Deck	101	Sev.(4)	43,129.70	sq.ft		
(107) Steel Opn Girder/Beam	101	Low(2)	5,687.30	ft		
(161) Stl Pin Pin/Han both	101	Sev.(4)	16.00	each		
(205) Re Conc Column	101	Mod.(3)	7.00	each		
(215) Re Conc Abutment	101	Low(2)	60.00	ft		
(231) Steel Pier Cap	101	Low(2)	22.50	ft		
(234) Re Conc Pier Cap	101	Low(2)	172.00	ft		
(300) Strip Seal Exp Joint	101	Sev.(4)	120.00	ft		
(311) Moveable Bearing	101	Low(2)	16.00	each		
(313) Fixed Bearing	101	Low(2)	12.00	each		
(321) Re Conc Approach Slab	101	Sev.(4)	900.00	sq.ft		
(331) Re Conc Bridge Railing	101	Sev.(4)	3,301.10	ft		
(5000) General Notes	200	Ben.(1)	1.00			
(5001) Roadway / Channel / Drainage	200	Ben.(1)	3.00	each		
(5002) Maintenance Recommendations	200	Ben.(1)	3.00	each		
(5103) Asphalt Overlay w/ Membrane	101	Sev.(4)	39,382.10			
(5203) Steel Protective Coating (515)	101	Low(2)	96,473.10			
(5300) Reinforced Concrete Wingwalls	101	Low(2)	60.30			

Work Candidates

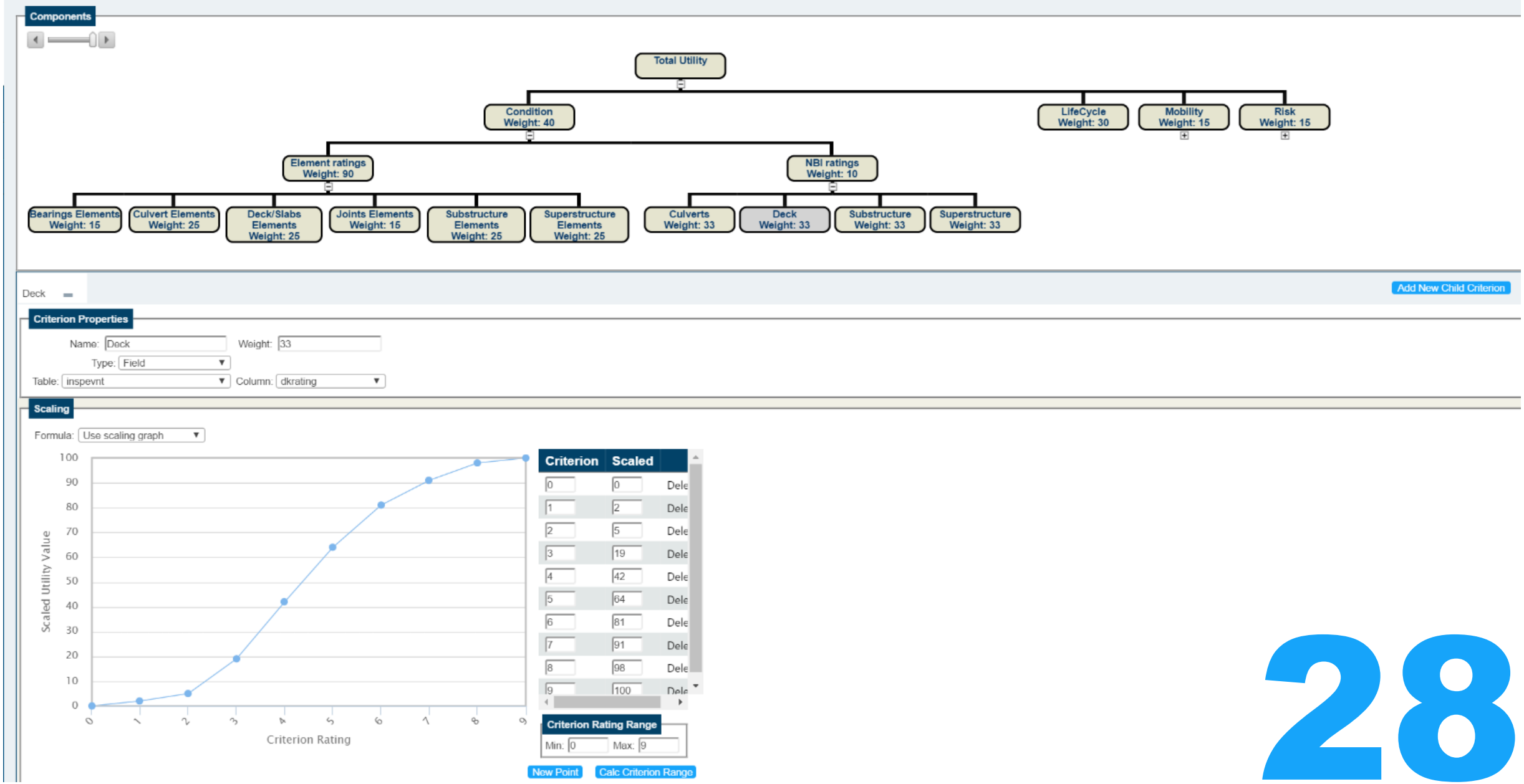


Work Candidate Name	Bridge ID	Facility Carried	Action Name	Est. Cost	Year
WorkCandidate1302	0P 11	CO.RD. INT. X-ROAD	Repair Spalls / Potholes		
0C 337-RHDN-070914-E3824575072	0C 337	US-89 (SR-89)	Repair Spalls / Potholes	19350	2014
WorkCandidate341	0C 518	I-215 (SR-215)	Repair Spalls / Potholes		
WorkCandidate1022	0F 255	600 SOUTH STREET	Repair Spalls / Potholes		
WorkCandidate1899	2F 496	I-70 (SR-70) EBL	Repair Spalls / Potholes		
WorkCandidate526	0C 757	I-215 (SR-215)	Repair Spalls / Potholes		
WorkCandidate123	035106F	1000 NORTH STREET	Repair Spalls / Potholes		
049020D-ENUZ-102015-7F07801ABC	049020D	400 SOUTH STREET	Repair Spalls / Potholes	-1	2019
0C 337-RHDN-070914-7AA26E91358	0C 337	US-89 (SR-89)	Repair Spalls / Potholes	4500	2014
0C 751-EROC-080614-6FA91969078	0C 751	SR-248	Repair Spalls / Potholes	-1	2014
WorkCandidate1663	1F 747	i-215NB (SR-215)	Repair Spalls / Potholes		
WorkCandidate309	0C 472	CO. RD.NW KANARRAV	Repair Spalls / Potholes		
0D 668-MOQR-083115-E462DC7978D	0D 668	US-191 (SR-191)	Repair Spalls / Potholes		2015
0D 595-ZQQY-072214-5191202CAD0	0D 595	US-40 (SR-40)	Repair Spalls / Potholes		2014
WorkCandidate2379	4D 652	I-80 (SR-80) WBL	Repair Spalls / Potholes		
WorkCandidate369	0C 560	US-40 (SR-40)	Repair Spalls / Potholes		
WorkCandidate2397	4D 667	I-84 (SR-84) WBL	Repair Spalls / Potholes		


Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
Element Deterioration Rates
Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

Utility

Admin > Modeling Config > Utility



Utility

Analysis > Utility Value

Utility Value: 77.36

Condition Value

Base Condition Value: 73.82 Scaled Value: 73.82 x Weight: 40 = Adjusted Condition Value: 2952.80

Condition Item	Base Value	Scaled Value	Weight	Adjusted Value
Element ratings	72.65	72.65	90.00	6,538.50
NBI ratings	84.33	84.33	10.00	843.30

Risk Value

Base Risk Value: 83.33 Scaled Value: 83.33 x Weight: 15 = Adjusted Risk Value: 1249.95

Risk Item	Base Value	Scaled Value	Weight	Adjusted Value
Channel and Channel Protection (NBI 61)			10.00	
Fracture Critical (NBI 92a)		100	20.00	2,000.00
Posting (NBI 70)	5.00	100	20.00	2,000.00
Scour Critical (NBI 113)			30.00	
Underclearances (NBI 69)	6.00	50	20.00	1,000.00
Waterway Adequacy (NBI 71)			10.00	

Mobility Value

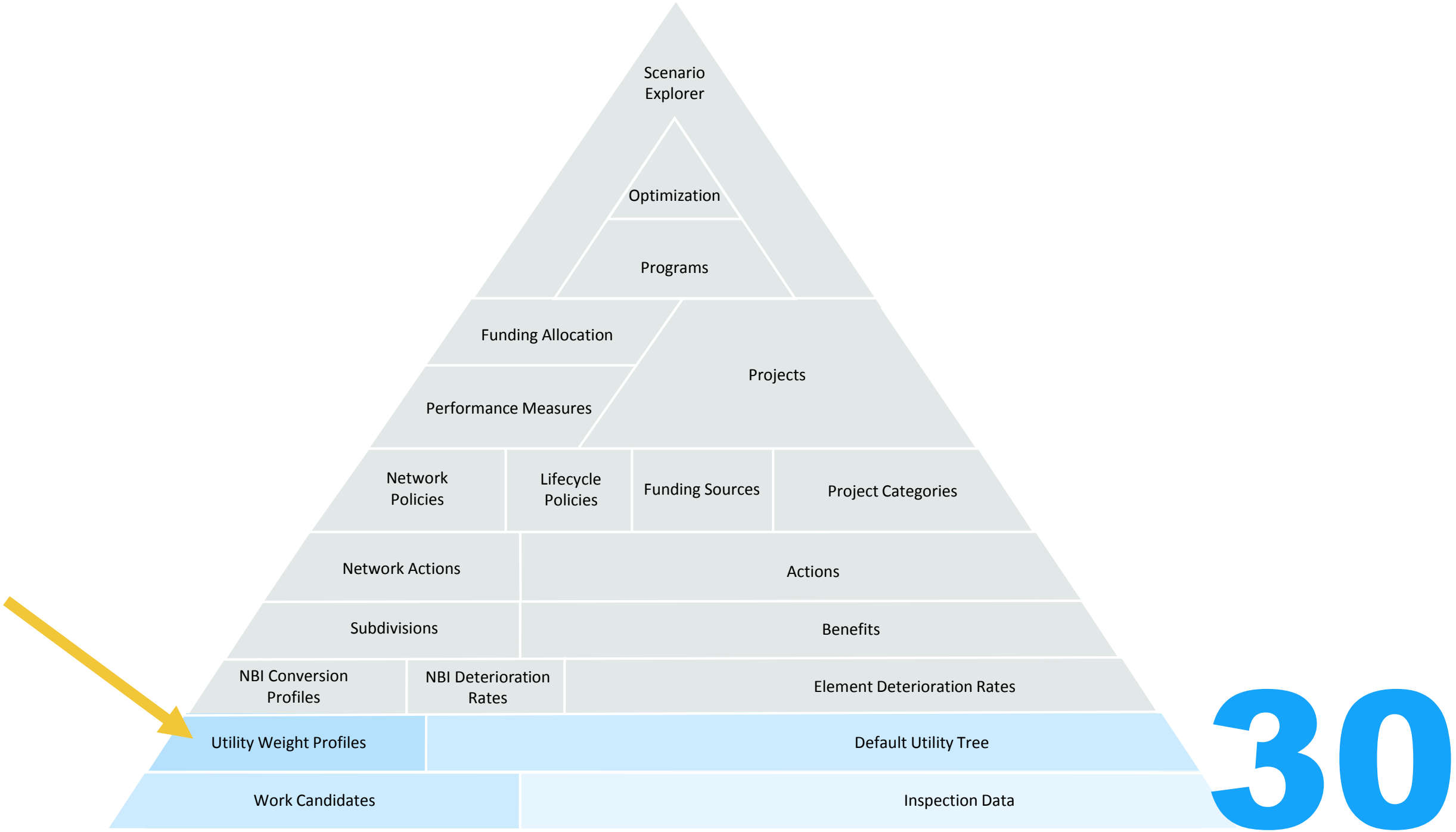
Base Mobility Value: 80.84 Scaled Value: 80.84 x Weight: 15 = Adjusted Mobility Value: 1212.60

Mobility Item	Base Value	Scaled Value	Weight	Adjusted Value
Approach Roadway Alignment (NBI 72)	6.00	50	15.00	750.00
Deck Geometry (NBI 68)	9.00	100	25.00	2,500.00
Detour Length (NBI 19)	3.11	88.90	15.00	1,333.50
Posting (NBI 70)	5.00	100	25.00	2,500.00
Underclearances (NBI 69)	6.00	50	20.00	1,000.00

LifeCycle Value

Base LifeCycle Value: N/A Scaled Value: N/A x Weight: 30 = Adjusted LifeCycle Value: N/A

LifeCycle Item	Base Value	Scaled Value	Weight	Adju
No records to display.				


Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
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Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

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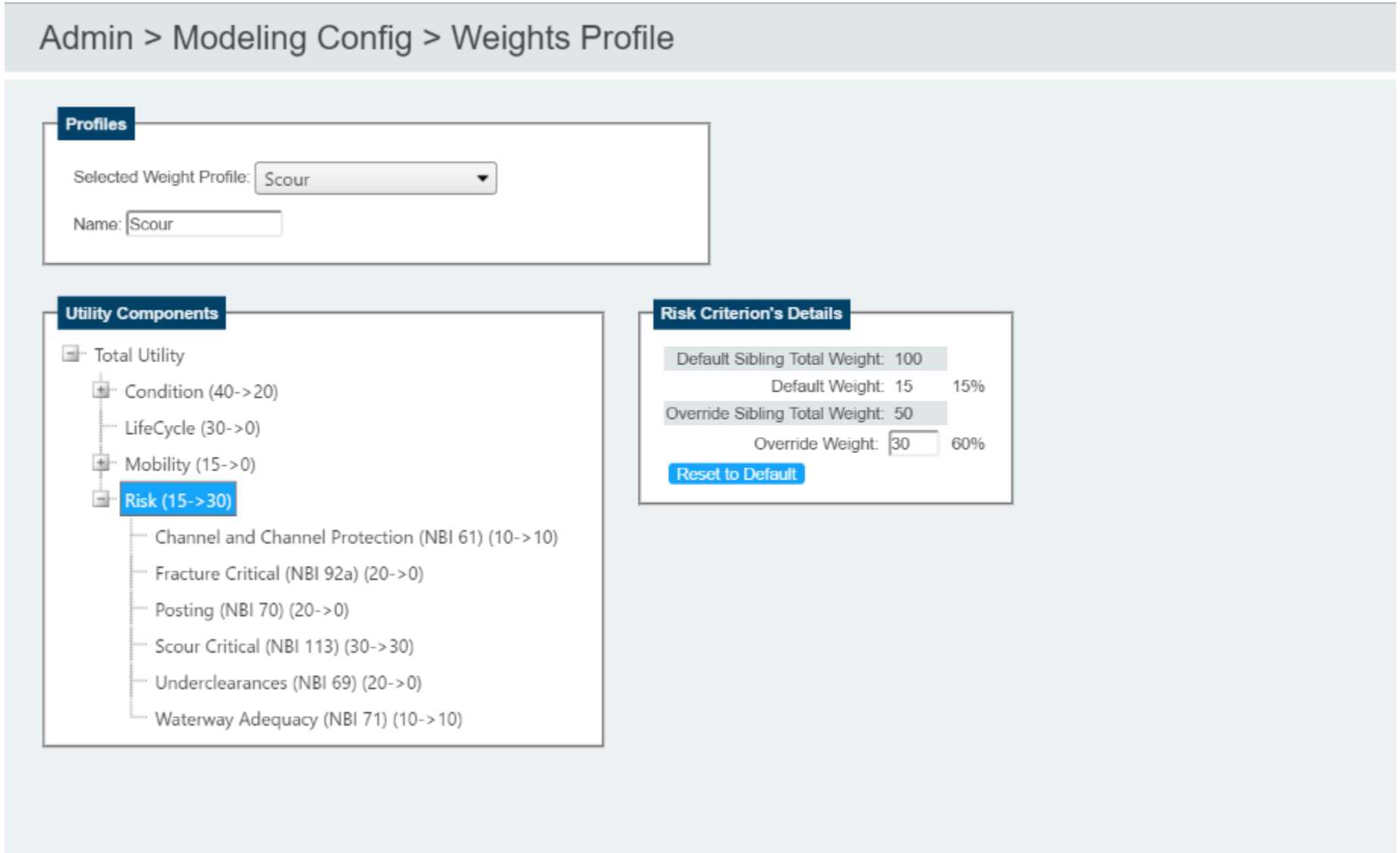

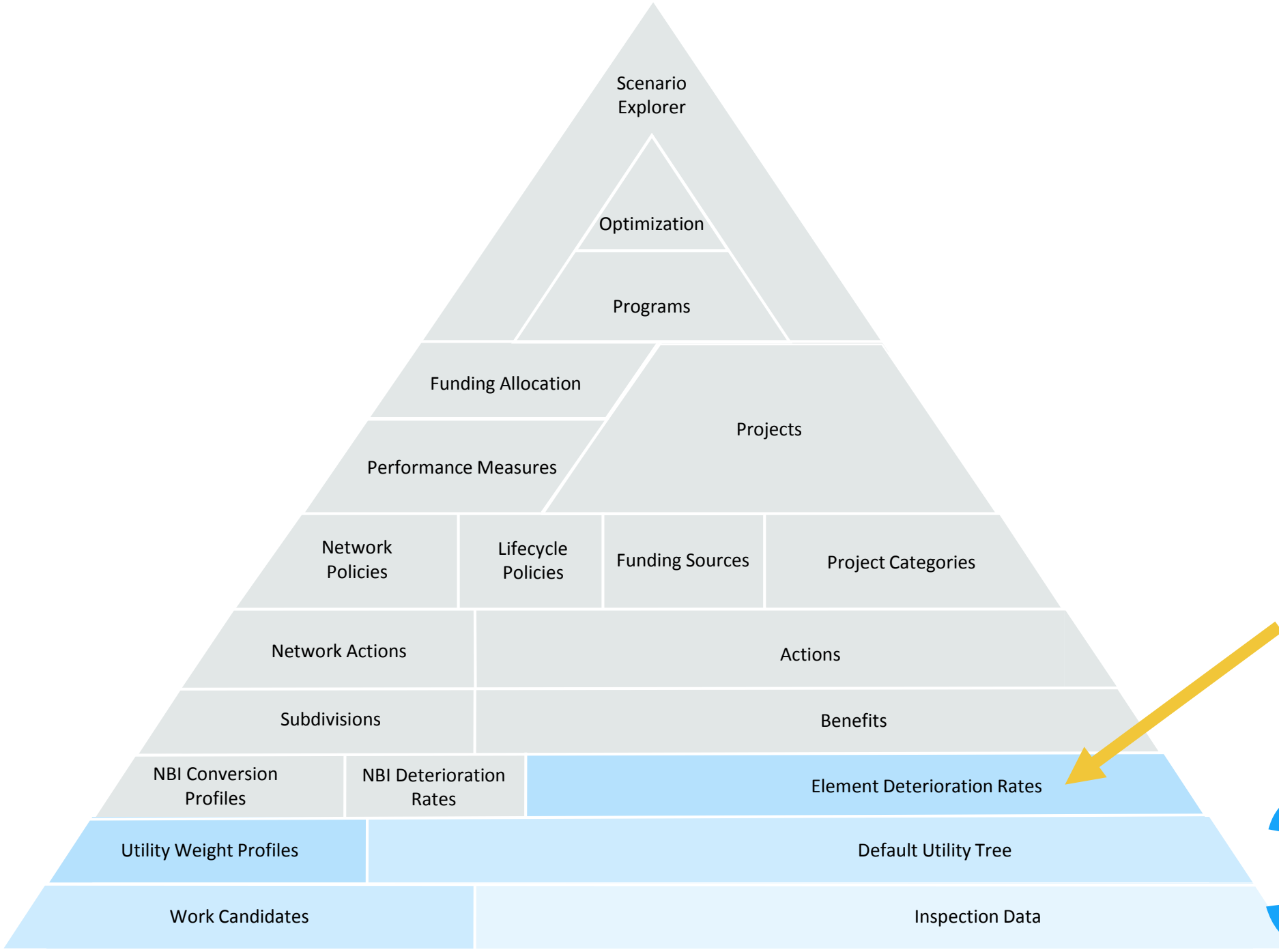
Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
Element Deterioration Rates
Utility Weight Profiles
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Element Deterioration Rates

Admin > Modeling Config > Element Spec

Elements

Element Filter: Not Filtered

ID	Short Name
12	Re Concrete Deck
13	Pre Concrete Deck
15	Pre Concrete Top Flange
16	Re Conc Top Flange
28	Steel Deck - Open Grid
29	Steel Deck - Conc Fill Grid
30	Steel Deck - Orthotropic
31	Timber Deck
38	Re Concrete Slab
54	Timber Slab
60	Other Deck
65	Other Slab
102	Steel Clsd Box Gird
104	Pre Clsd Box Girder
105	Re Clsd Box Girder
106	Othr Clsd Web/Box Girder
107	Steel Opn Girder/Beam
109	Pre Opn Conc Girder/Beam
110	Re Conc Opn Girder/Beam
111	Timber Open Girder
112	Other Open Girder/Beam
113	Steel Stringer

Create Element | Copy Element

Element Specifications

Element Rollup Key:
Element Key: 12 NBE:
Short Name: Re Concrete Deck Long Name: Reinforced Concrete Deck
Relative Weight: 2 All Relative Weights
NBI Relative Weight: 2
Units: 20 sq.ft :: sq.m [.09290304]
Notes: This element defines all reinforced concrete bridge deck/slab regardless of the wearing surface or protection systems used.
Manual: Choose File No file chosen Upload
Defect:
Protective System/Wearing Surface:
Primary Defect:

Health Index Coefficients

CS1: 1 CS3: 0.33
CS2: 0.67 CS4: 0

Deterioration Modeling

Model: View Graphs

Model Parameters

Median years in CS1: 14.42 Shaping parameter: 1.3
Median years in CS2: 42 Formula:
Median years in CS3: 14.86

Classifications

Category: 6 Decks/Slabs
Material: 7 Decks
Type: 6 Decks/Slab

Element Deterioration Rates

Element: (12) Re Concrete Deck

Model Parameters

Median years in CS1: 25 Median years in CS2: 42 Median years in CS3: 14.86 Shaping parameter: 1.3

Reset

Element Assumptions

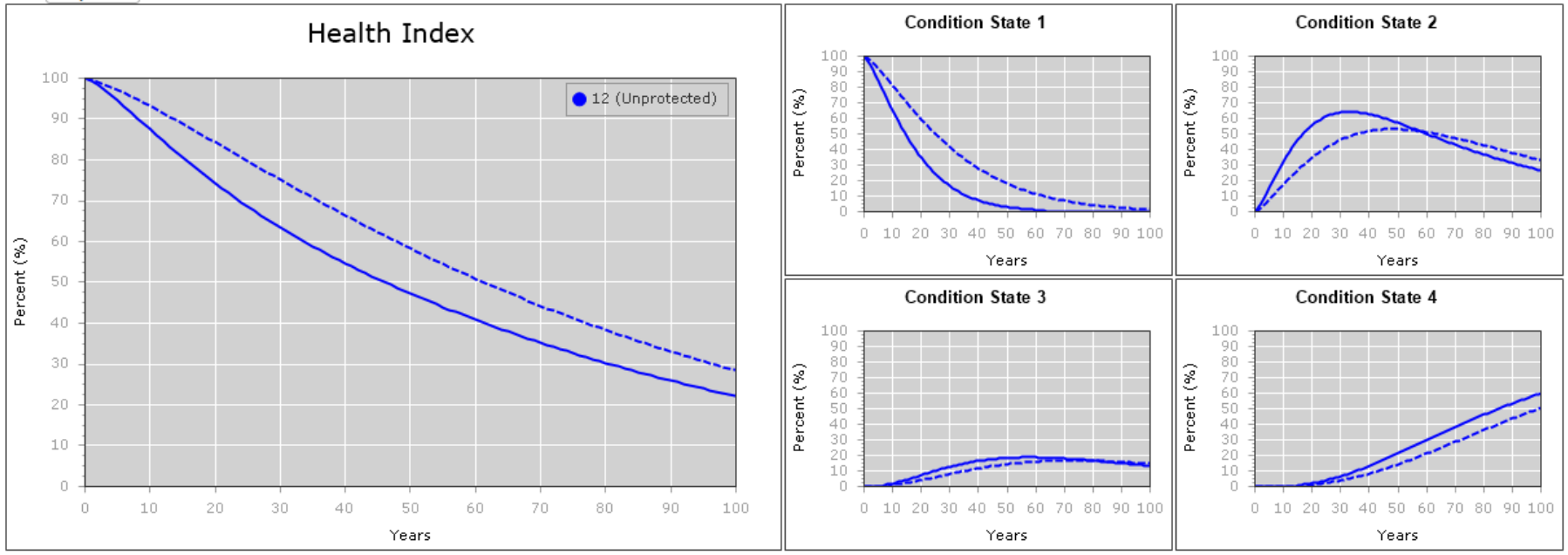
Environment: Mod. (3)

Protective system(s):
- (510) Wearing Surfaces
- (520) Conc Re Prot Sys
- (521) Conc Prot Coating

Redraw

Deterioration Curves

Scale: 100 years



Deterioration Forecasts

Year	Pct. 1	Pct. 2	Pct. 3	Pct. 4	
1	98.95	1.05	0.00	0.00	
2	97.43	2.55	0.02	0.00	
3	95.69	4.25	0.06	0.00	98.54

Element Deterioration Rates

Element: (12) Re Concrete Deck

Model Parameters

Median years in CS1: 25 Median years in CS2: 42 Median years in CS3: 14.86 Shaping parameter: 1.3

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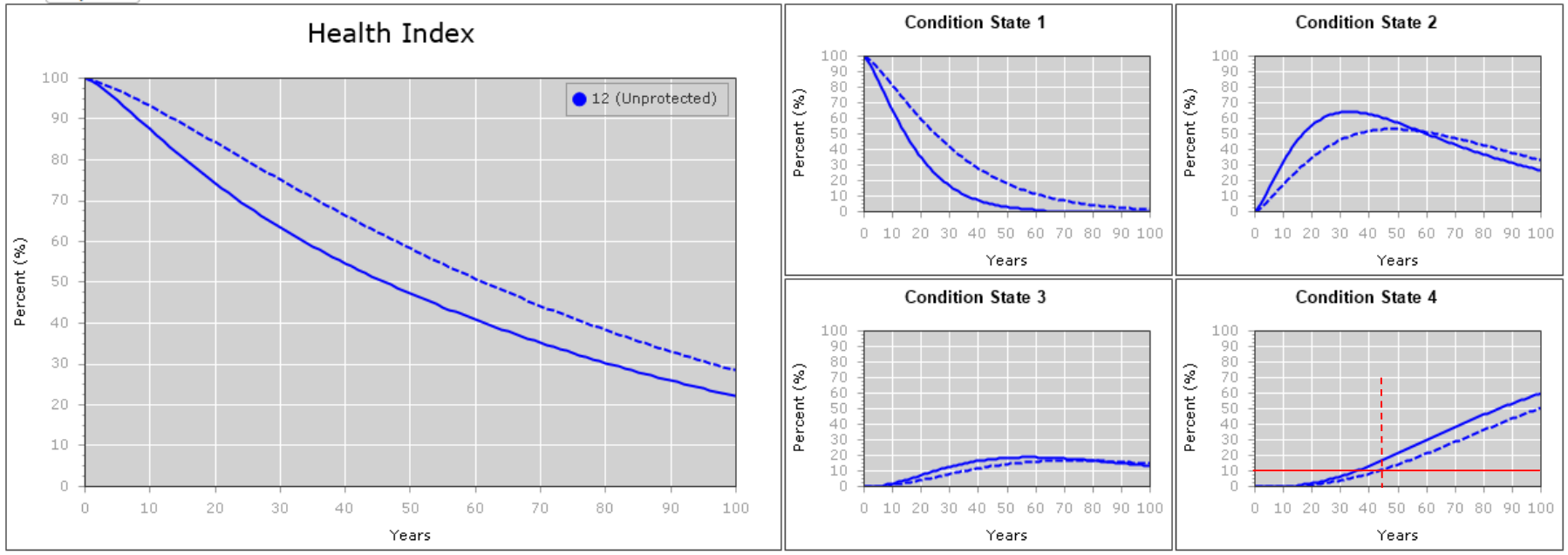

Deterioration Forecasts

Year	Pct. 1	Pct. 2	Pct. 3	Pct. 4	Index
1	98.95	1.05	0.00	0.00	
2	97.43	2.55	0.02	0.00	
3	95.69	4.25	0.06	0.00	98.54

Element Deterioration Rates

Element: (12) Re Concrete Deck

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Median years in CS1: 25 Median years in CS2: 42 Median years in CS3: 14.86 Shaping parameter: 1.3

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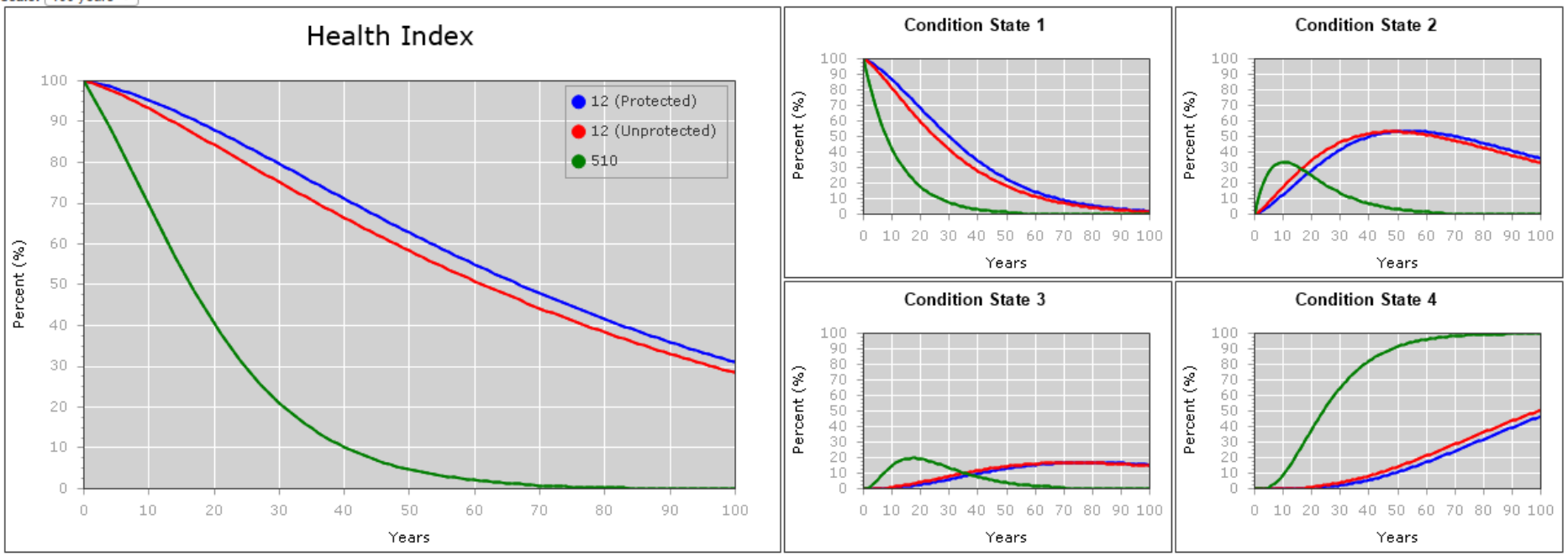
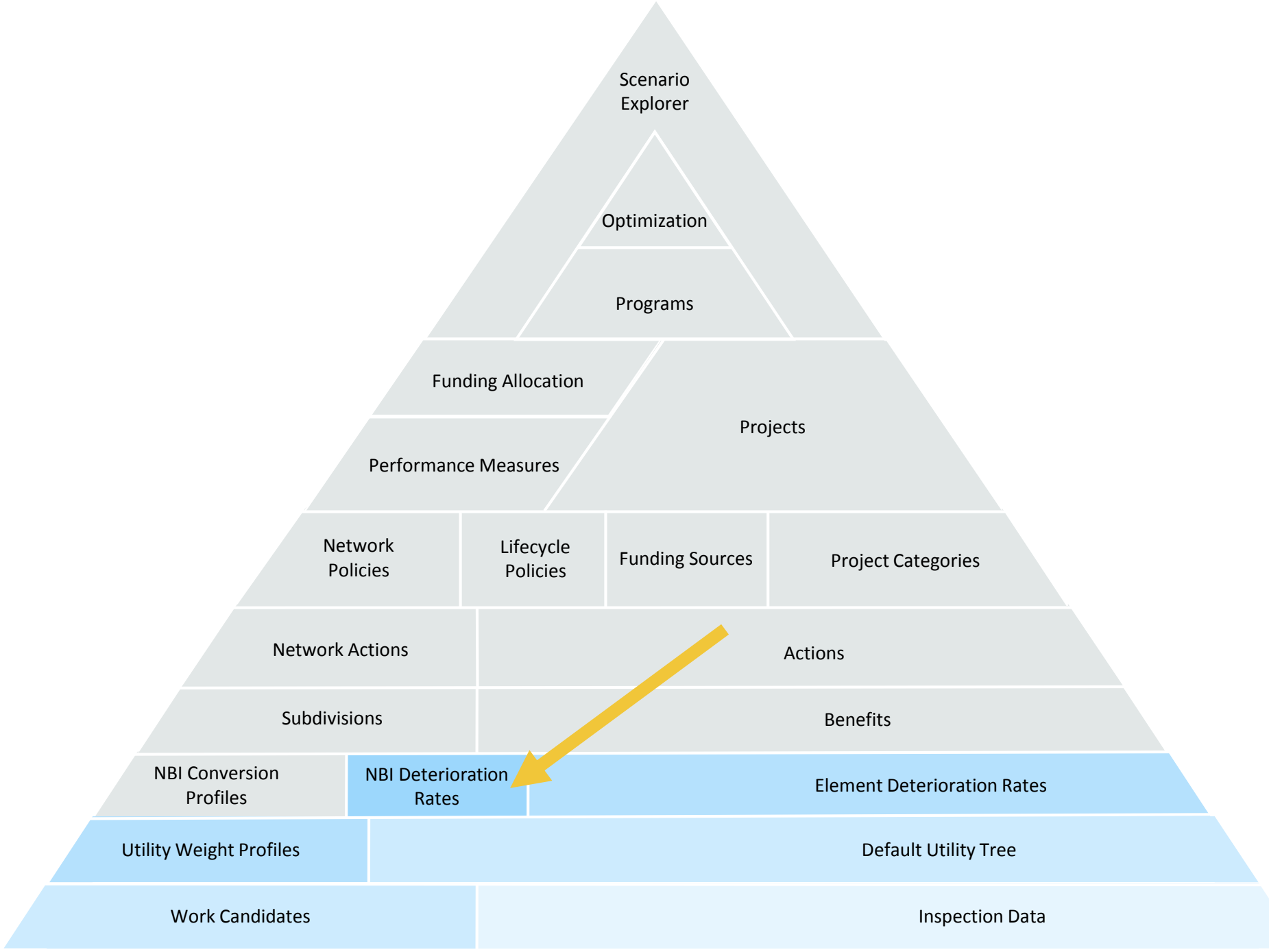
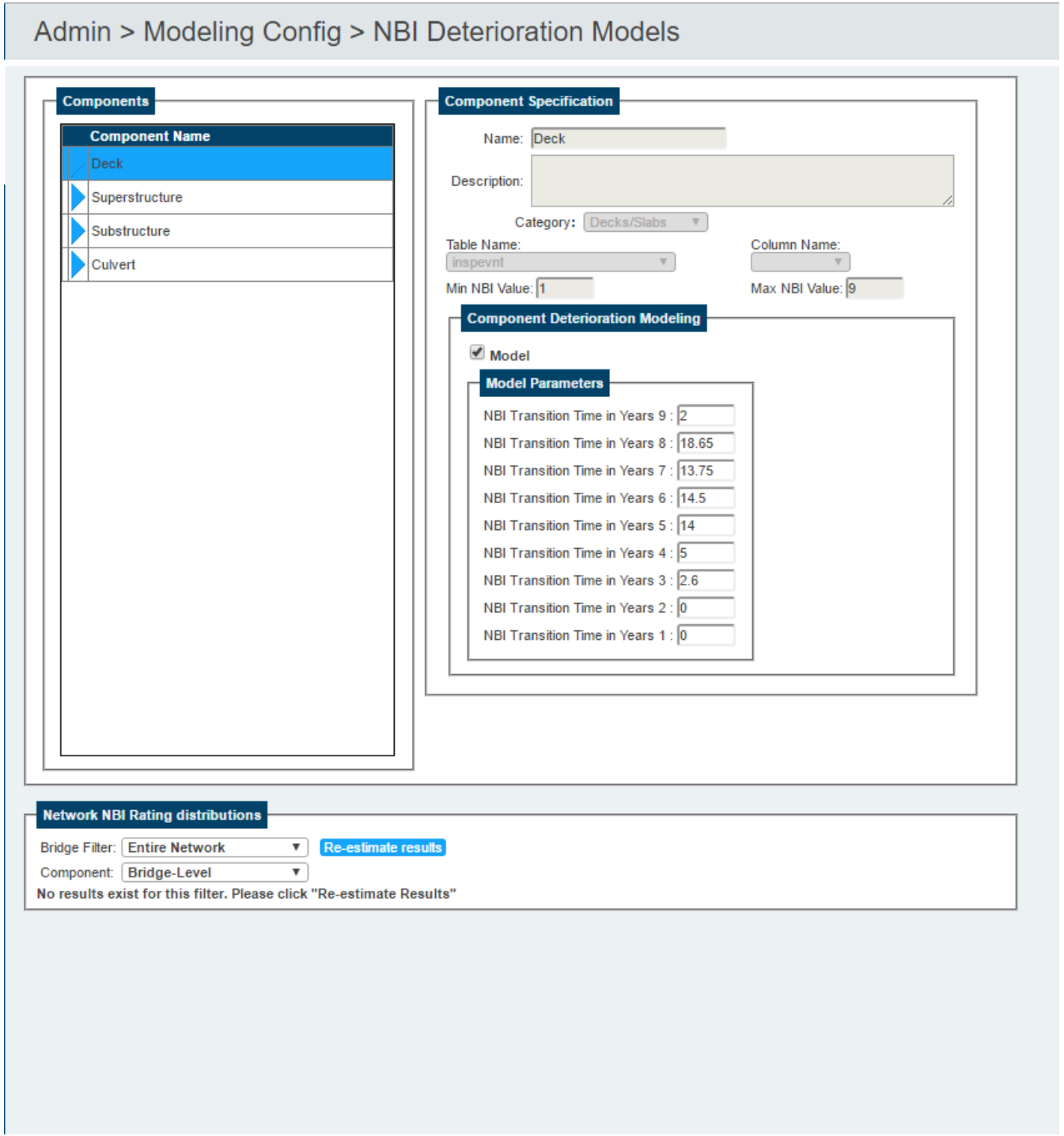


Deterioration Forecasts

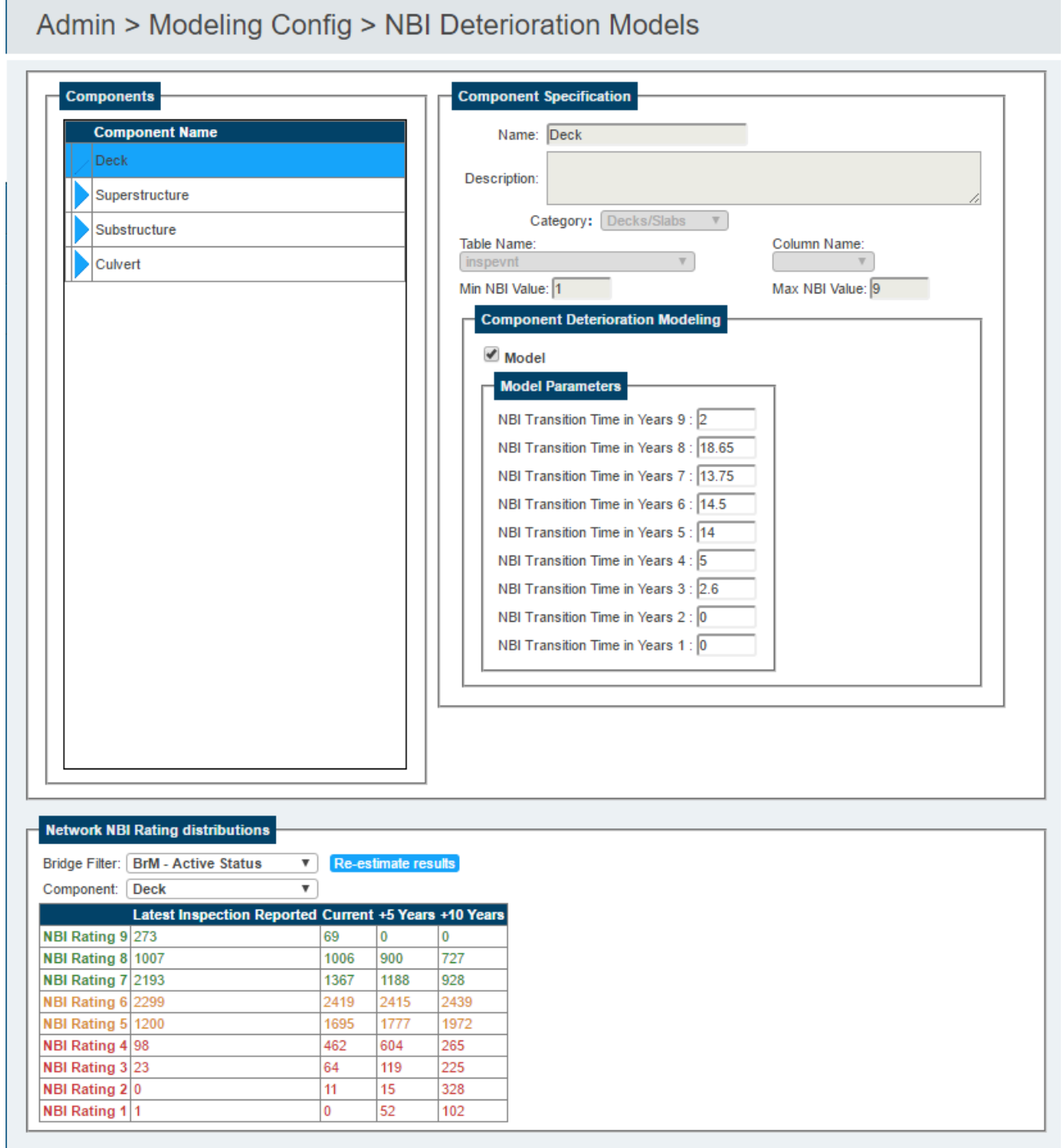
Year	Pct. 1	Pct. 2	Pct. 3	Pct. 4	He dex
1	99.32	0.68	0.00	0.00	99.
2	98.32	1.67	0.01	0.00	99.44
3	97.16	2.81	0.03	0.00	99.04


Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
Element Deterioration Rates
Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

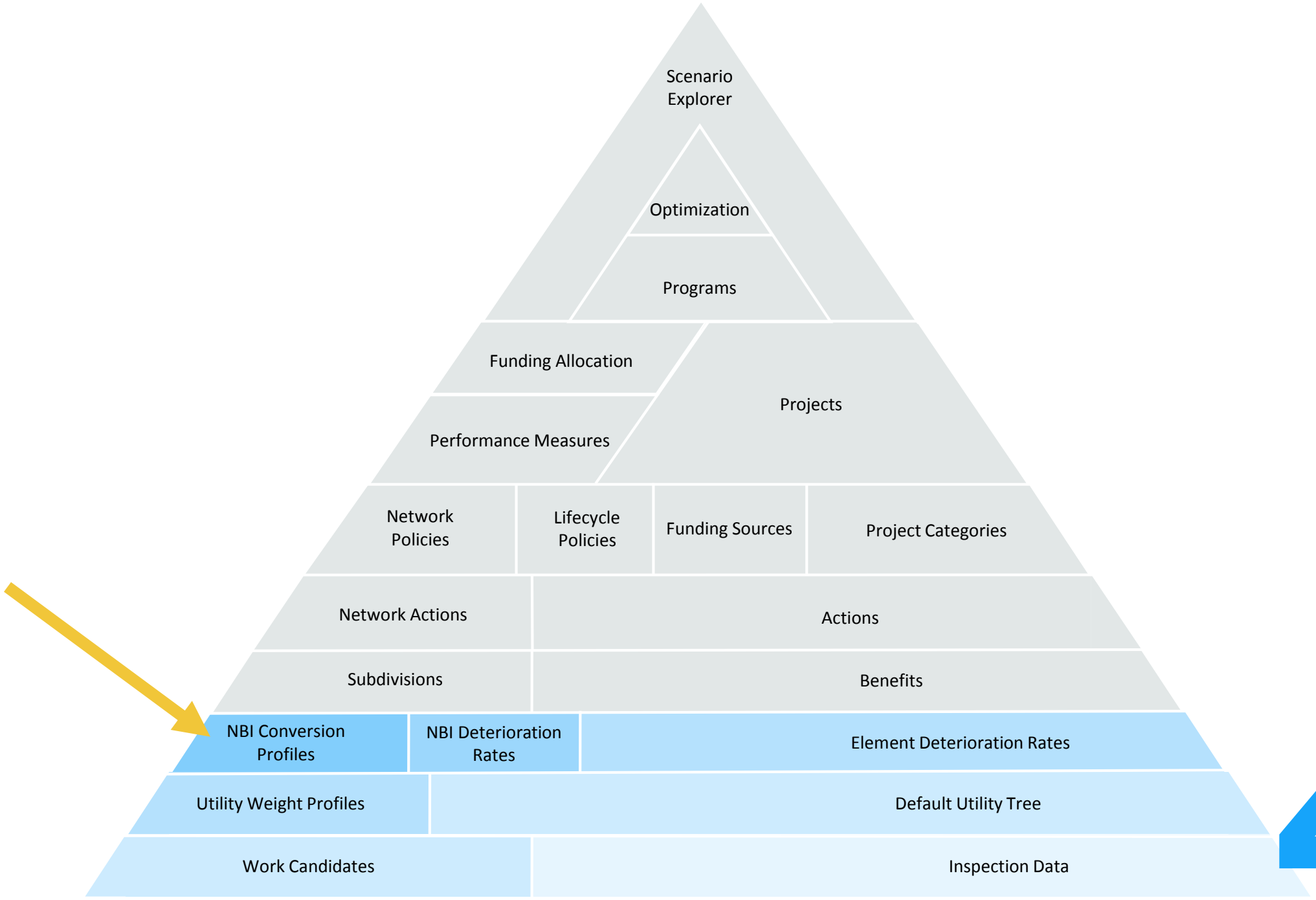
NBI Deterioration Rates



NBI Deterioration Rates



	Latest Inspection Reported	Current	+5 Years	+10 Years
NBI Rating 9	273	69	0	0
NBI Rating 8	1007	1006	900	727
NBI Rating 7	2193	1367	1188	928
NBI Rating 6	2299	2419	2415	2439
NBI Rating 5	1200	1695	1777	1972
NBI Rating 4	98	462	604	265
NBI Rating 3	23	64	119	225
NBI Rating 2	0	11	15	328
NBI Rating 1	1	0	52	102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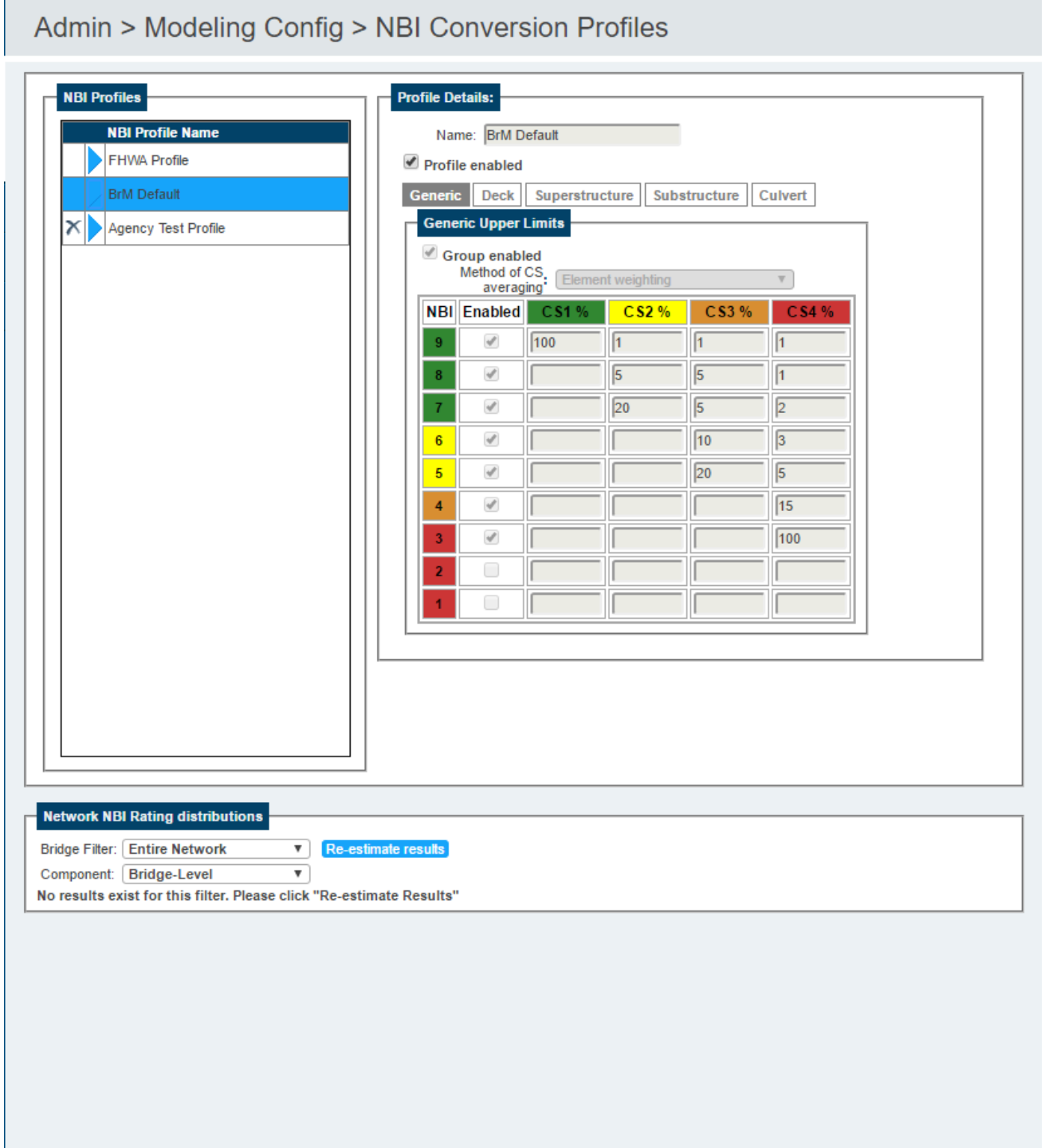
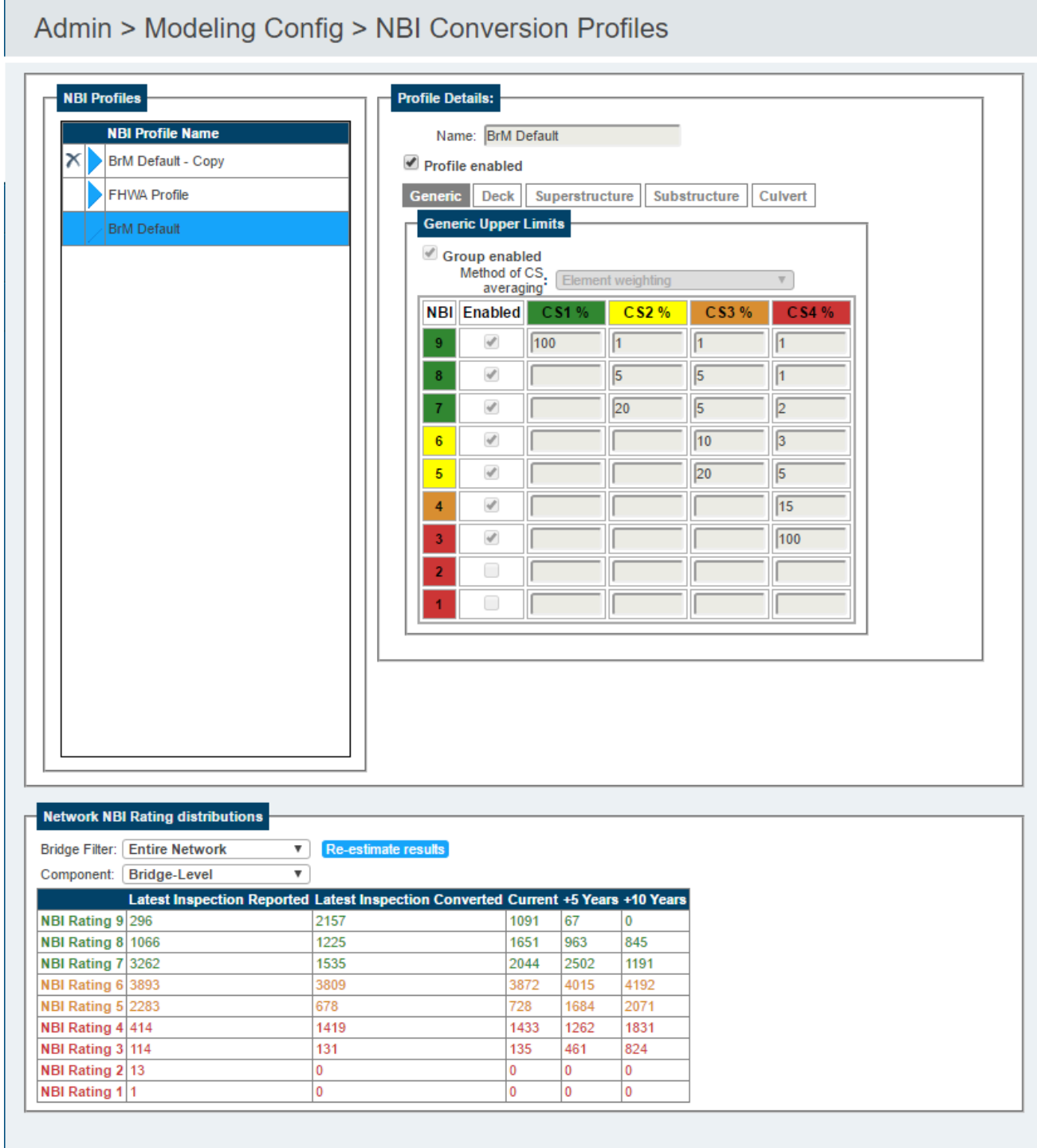
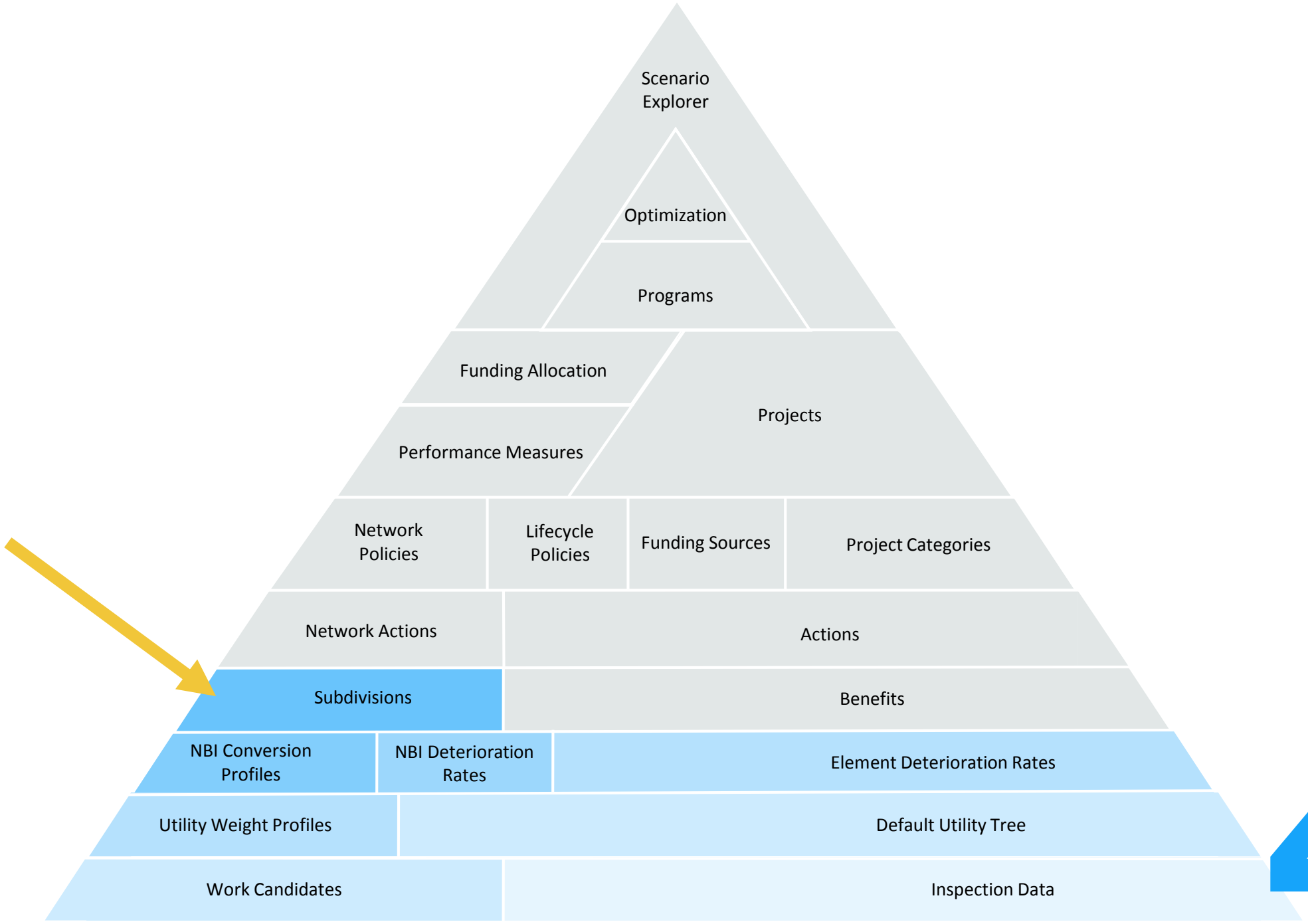
NBI Conversion Profiles



NBI Conversion Profiles

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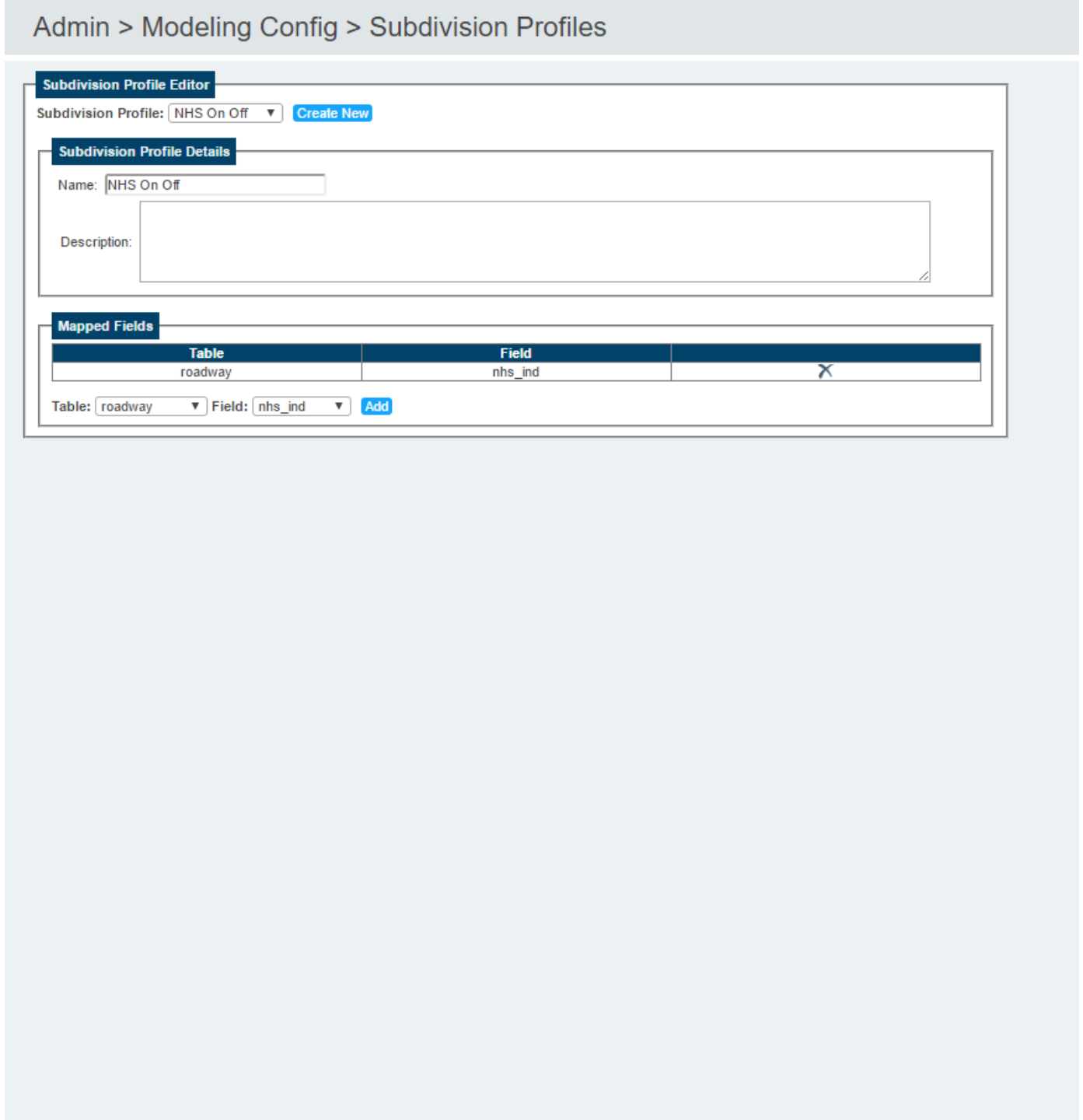
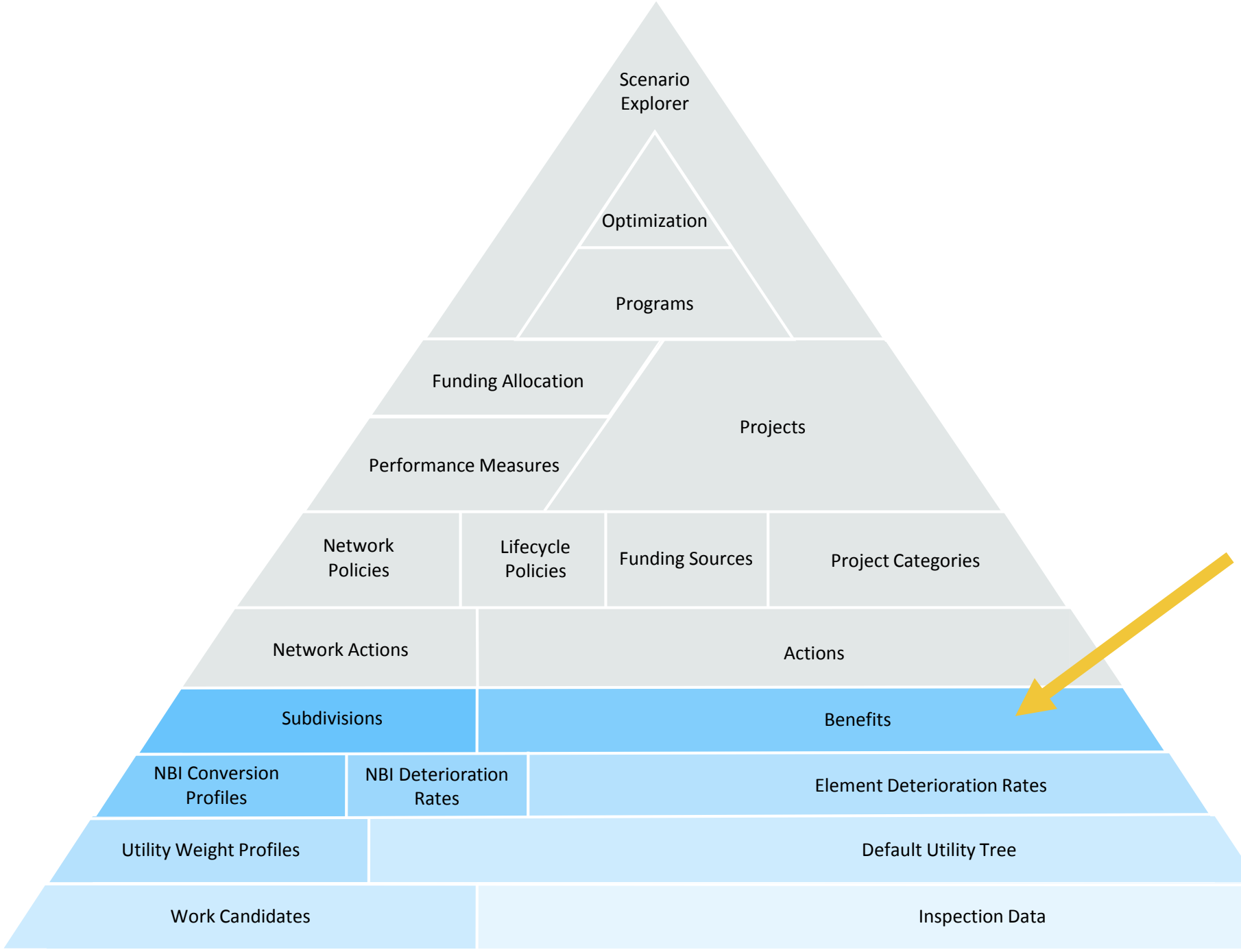
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
Element Deterioration Rates
Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

Subdivisions

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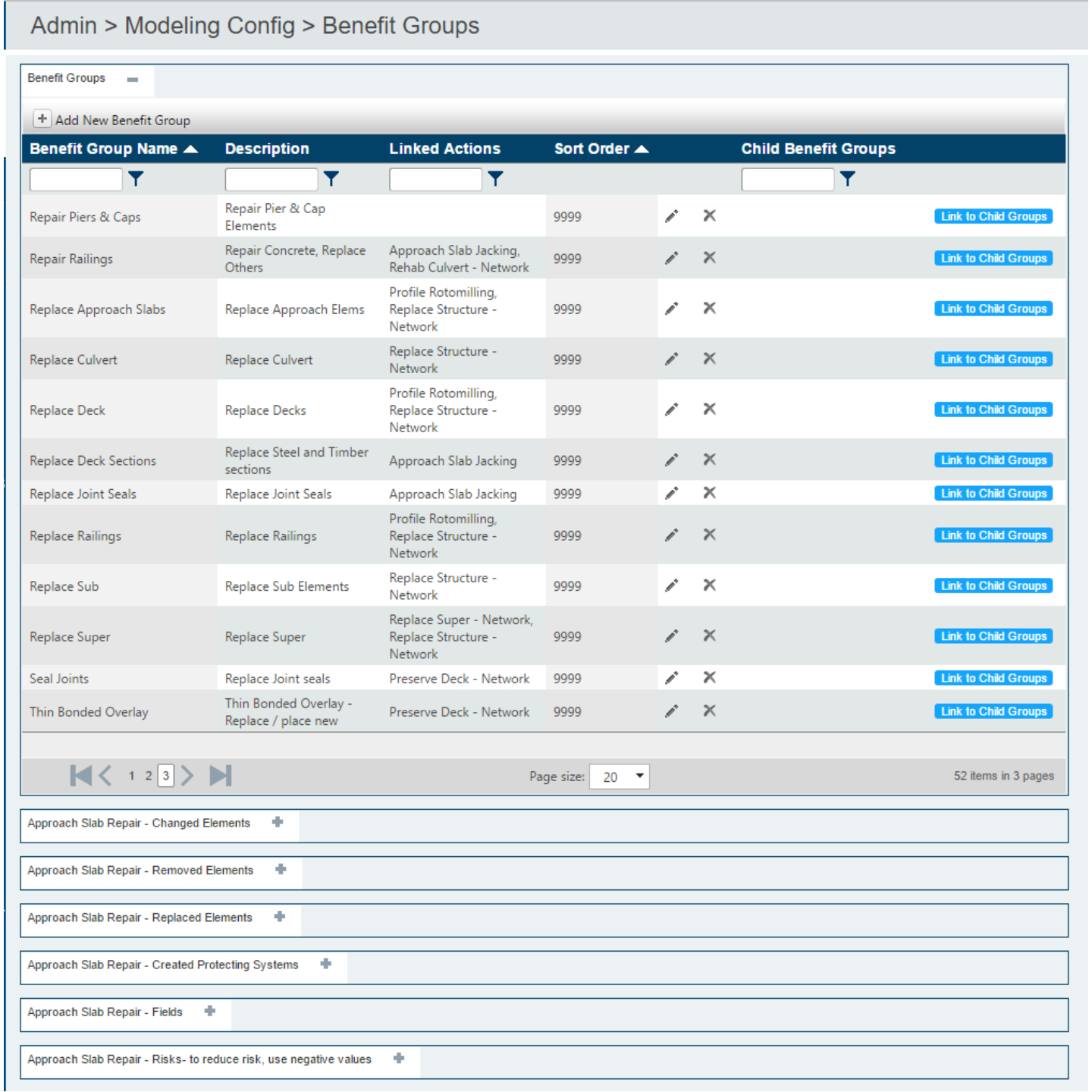
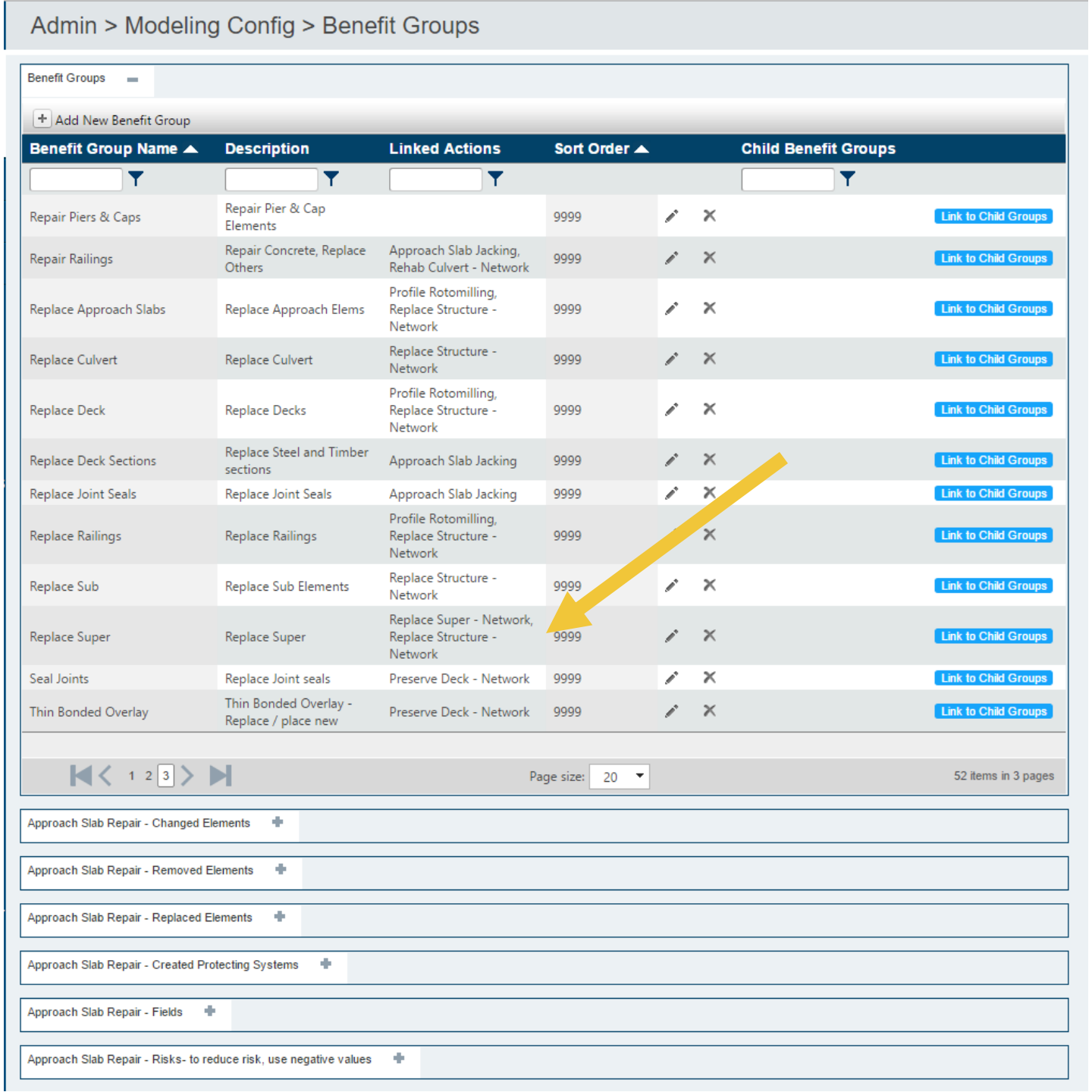
Benefits


Admin > Modeling Config > Benefit Groups
Benefit Groups
Add New Benefit Group
Benefit Group Name
Description
Linked Actions
Sort Order
Child Benefit Groups
Repair Piers & Caps
Repair Pier & Cap Elements
9999
Link to Child Groups
Repair Railings
Repair Concrete, Replace Others
Approach Slab Jacking, Rehab Culvert - Network
9999
Link to Child Groups
Replace Approach Slabs
Replace Approach Elems
Profile Rotomilling, Replace Structure - Network
9999
Link to Child Groups
Replace Culvert
Replace Culvert
Replace Structure - Network
9999
Link to Child Groups
Replace Deck
Replace Decks
Profile Rotomilling, Replace Structure - Network
9999
Link to Child Groups
Replace Deck Sections
Replace Steel and Timber sections
Approach Slab Jacking
9999
Link to Child Groups
Replace Joint Seals
Replace Joint Seals
Approach Slab Jacking
9999
Link to Child Groups
Replace Railings
Replace Railings
Profile Rotomilling, Replace Structure - Network
9999
Link to Child Groups
Replace Sub
Replace Sub Elements
Replace Structure - Network
9999
Link to Child Groups
Replace Super
Replace Super
Replace Super - Network, Replace Structure - Network
9999
Link to Child Groups
Seal Joints
Replace Joint seals
Preserve Deck - Network
9999
Link to Child Groups
Thin Bonded Overlay
Thin Bonded Overlay - Replace / place new
Preserve Deck - Network
9999
Link to Child Groups
1 2 3
Page size: 20
52 items in 3 pages
Approach Slab Repair - Changed Elements
Approach Slab Repair - Removed Elements
Approach Slab Repair - Replaced Elements
Approach Slab Repair - Created Protecting Systems
Approach Slab Repair - Fields
Approach Slab Repair - Risks- to reduce risk, use negative values

Benefits


Admin > Modeling Config > Benefit Groups
Benefit Groups
Add New Benefit Group
Benefit Group Name
Description
Linked Actions
Sort Order
Child Benefit Groups
Repair Piers & Caps
Repair Pier & Cap Elements
9999
Link to Child Groups
Repair Railings
Repair Concrete, Replace Others
Approach Slab Jacking, Rehab Culvert - Network
9999
Link to Child Groups
Replace Approach Slabs
Replace Approach Elems
Profile Rotomilling, Replace Structure - Network
9999
Link to Child Groups
Replace Culvert
Replace Culvert
Replace Structure - Network
9999
Link to Child Groups
Replace Deck
Replace Decks
Profile Rotomilling, Replace Structure - Network
9999
Link to Child Groups
Replace Deck Sections
Replace Steel and Timber sections
Approach Slab Jacking
9999
Link to Child Groups
Replace Joint Seals
Replace Joint Seals
Approach Slab Jacking
9999
Link to Child Groups
Replace Railings
Replace Railings
Profile Rotomilling, Replace Structure - Network
9999
Link to Child Groups
Replace Sub
Replace Sub Elements
Replace Structure - Network
9999
Link to Child Groups
Replace Super
Replace Super
Replace Super - Network, Replace Structure - Network
9999
Link to Child Groups
Seal Joints
Replace Joint seals
Preserve Deck - Network
9999
Link to Child Groups
Thin Bonded Overlay
Thin Bonded Overlay - Replace / place new
Preserve Deck - Network
9999
Link to Child Groups
1 2 3
Page size: 20
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Approach Slab Repair - Changed Elements
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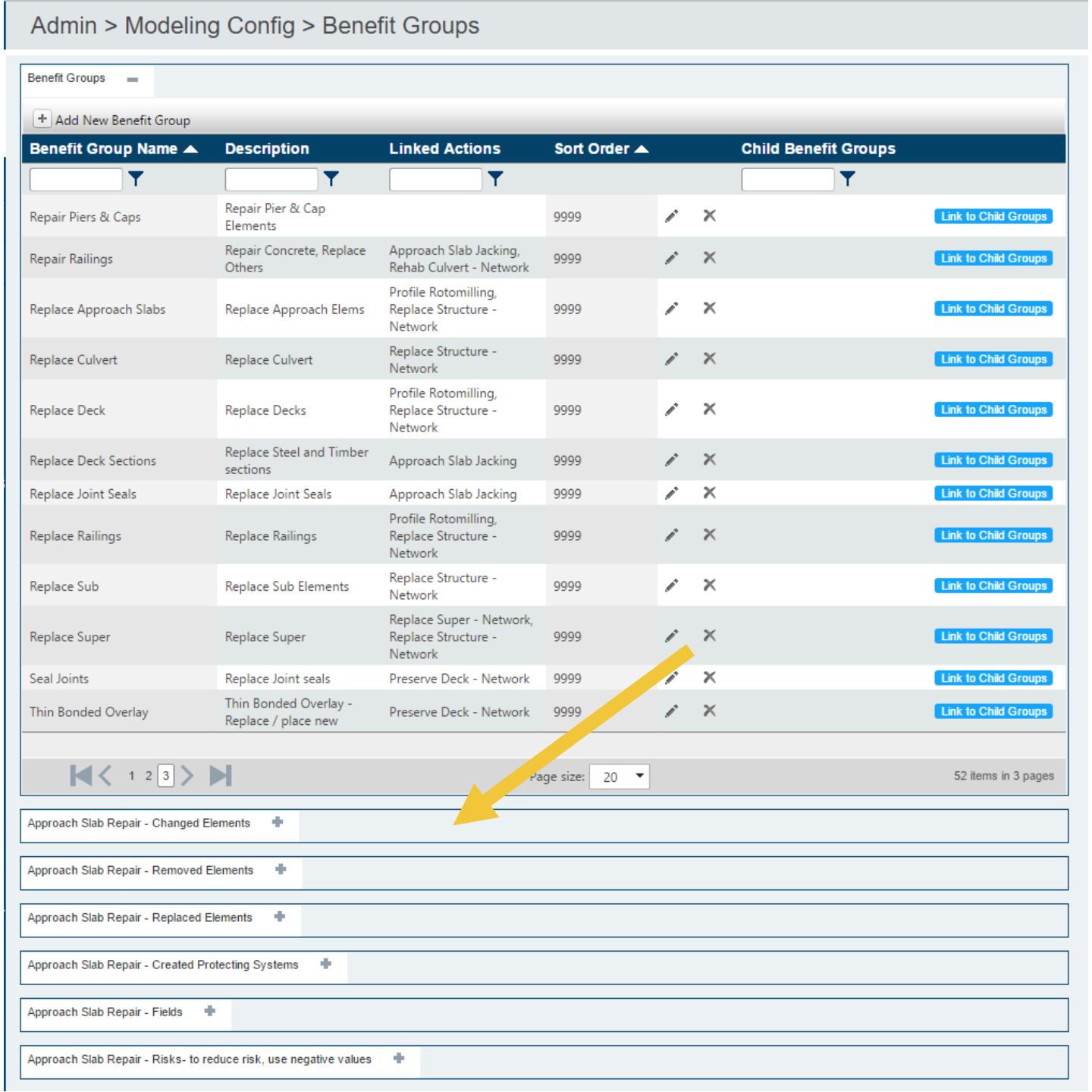
Approach Slab Repair - Replaced Elements
Approach Slab Repair - Created Protecting Systems
Approach Slab Repair - Fields
Approach Slab Repair - Risks- to reduce risk, use negative values

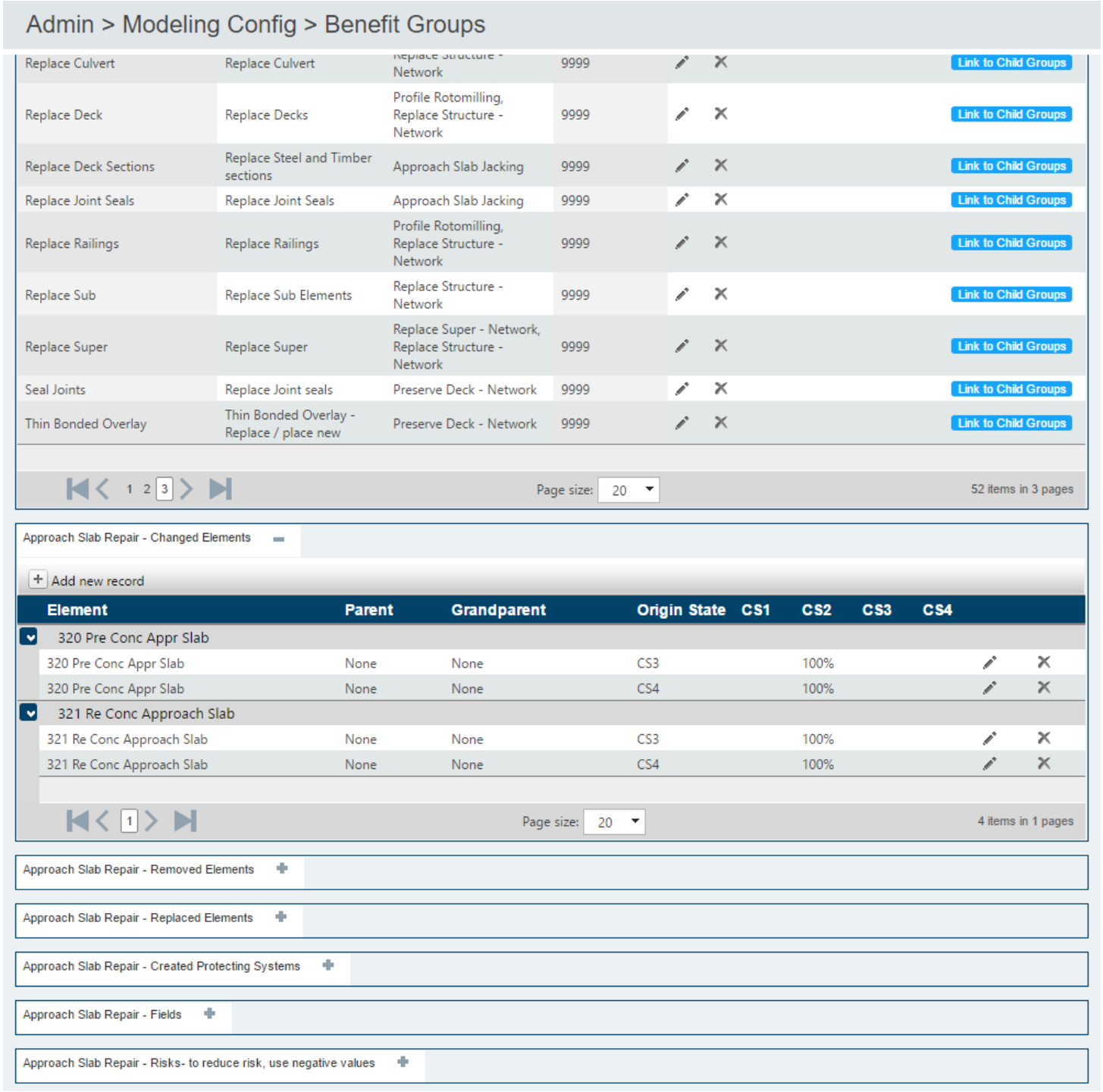
Benefits

Changed Elements
Removed Elements
Replaced Elements
Created Protective Sys
Fields
Risks



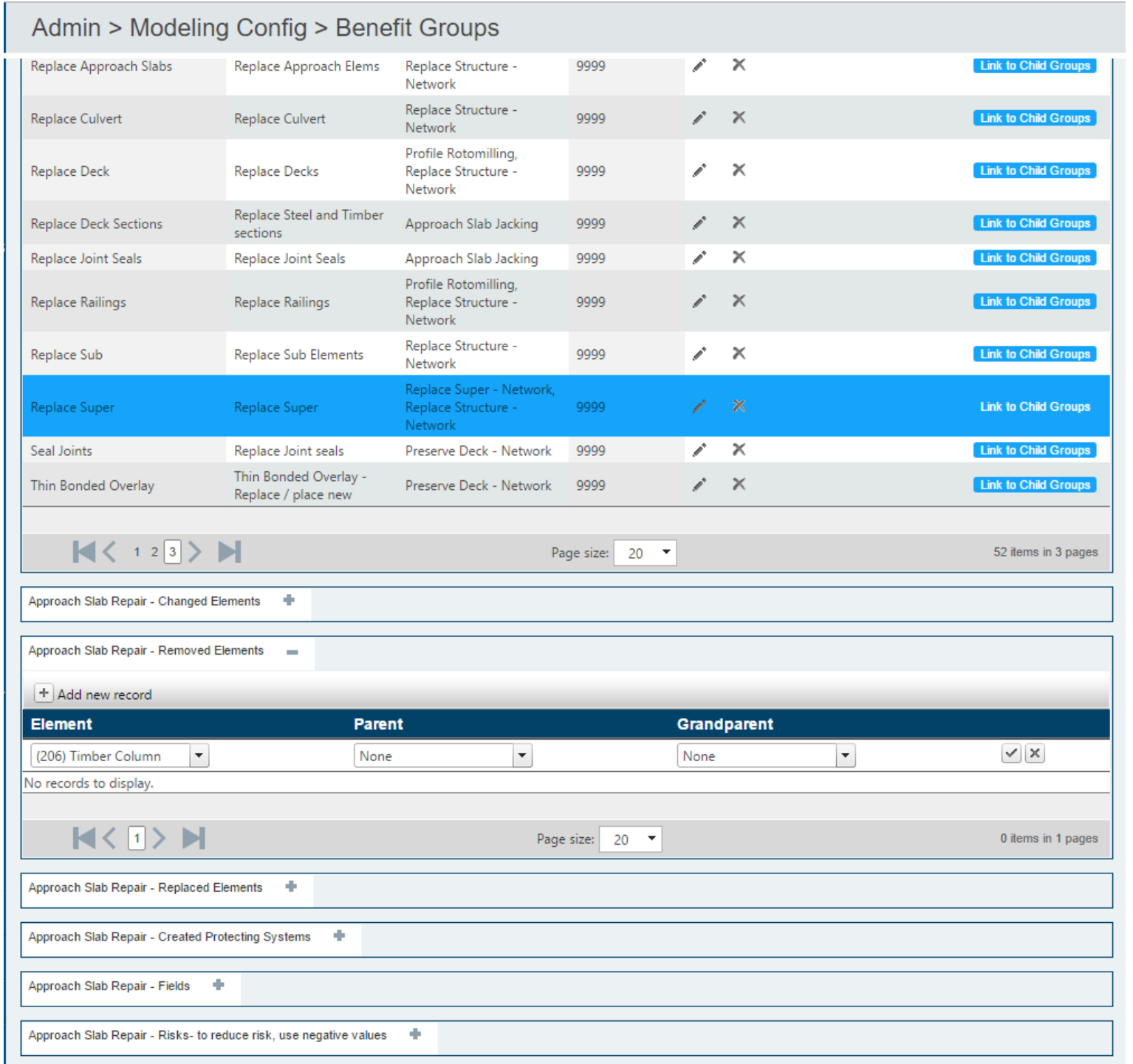
Benefits

Changed Elements
Removed Elements
Replaced Elements
Created Protective Sys
Fields
Risks



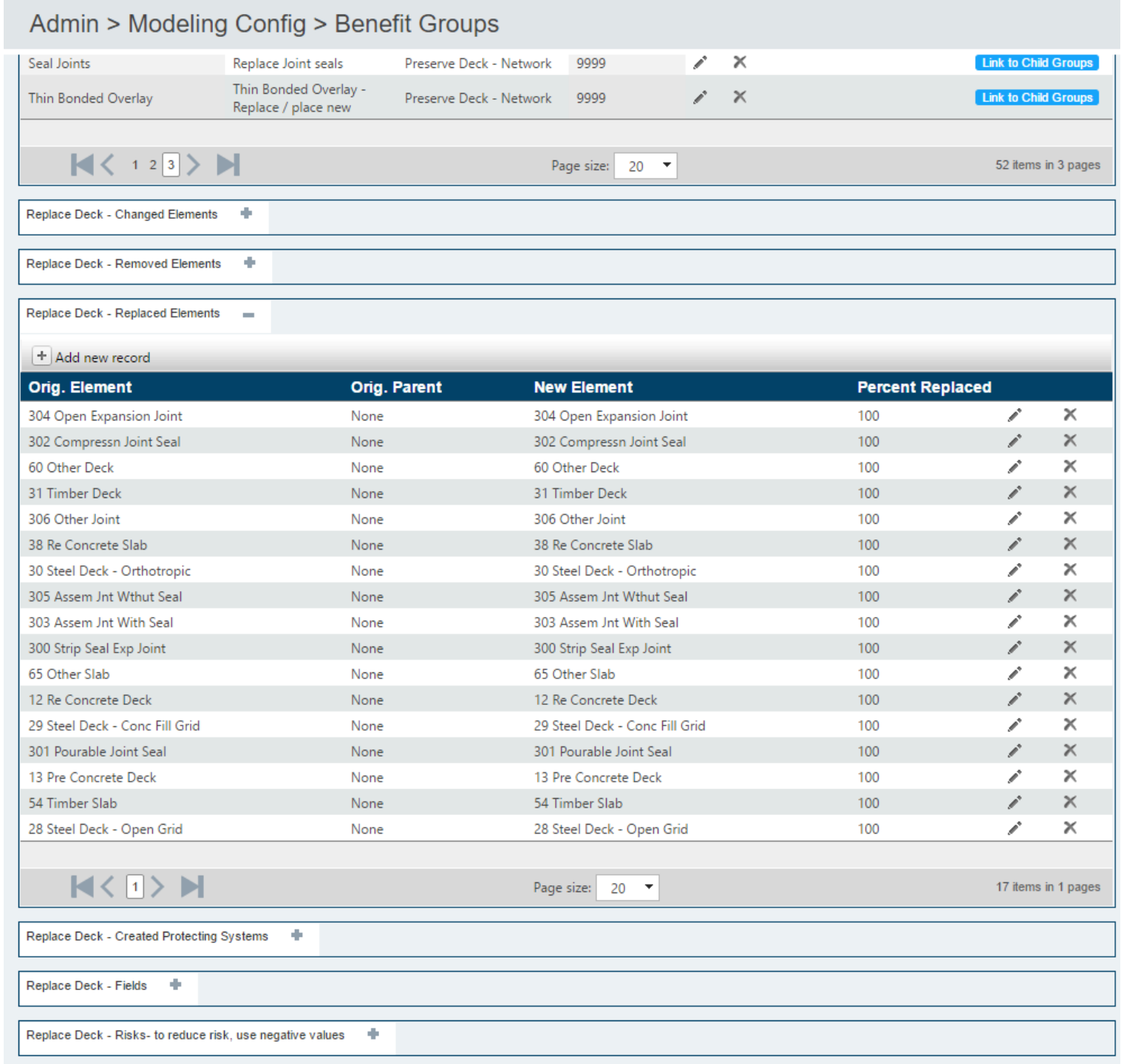
Benefits

Changed Elements
Removed Elements
Replaced Elements
Created Protective Sys
Fields
Risks



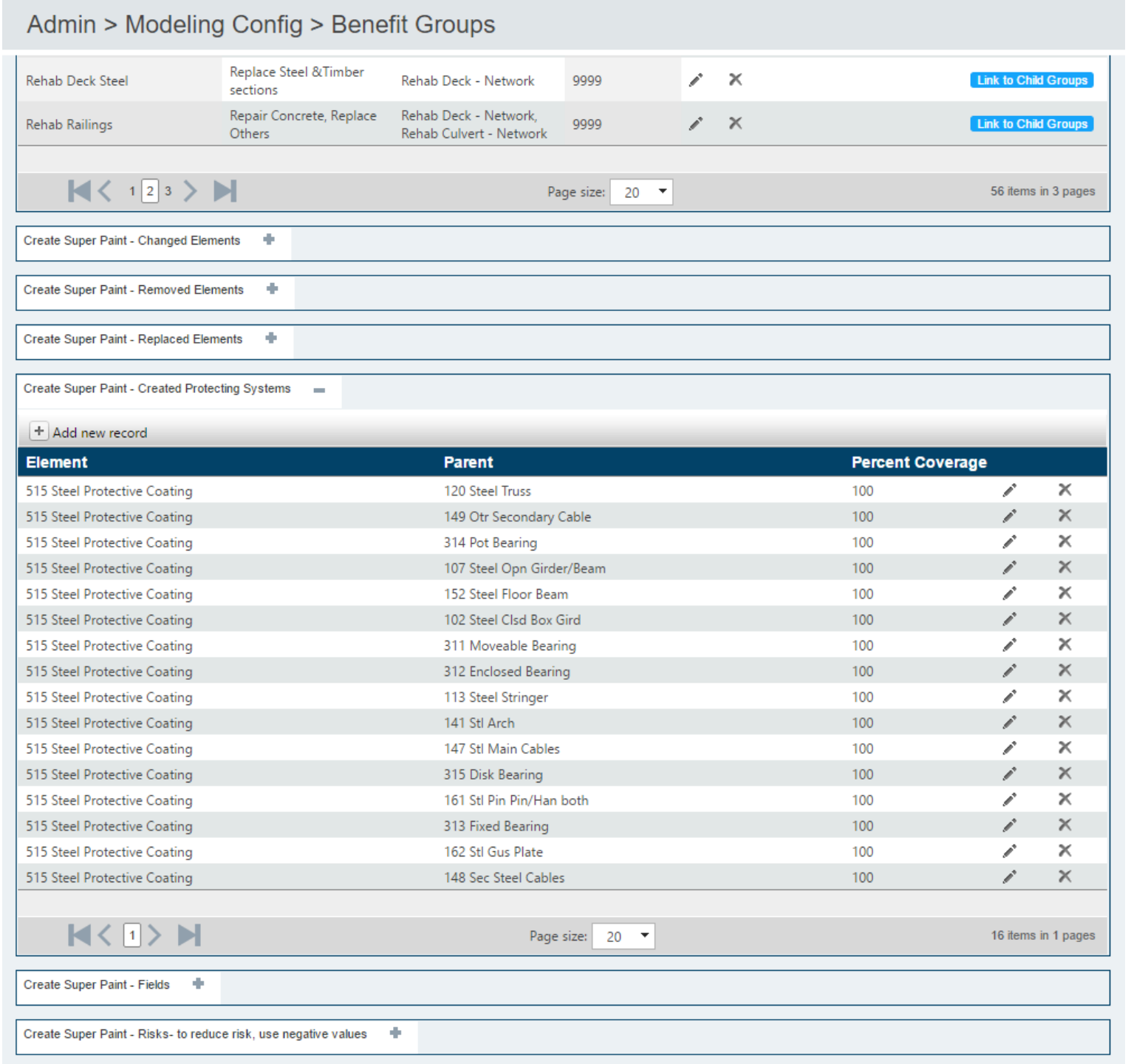
Benefits

Changed Elements
Removed Elements
Replaced Elements
Created Protective Sys
Fields
Risks



Benefits

Changed Elements
Removed Elements
Replaced Elements
Created Protective Sys
Fields
Risks



Benefits

Changed Elements
Removed Elements
Replaced Elements
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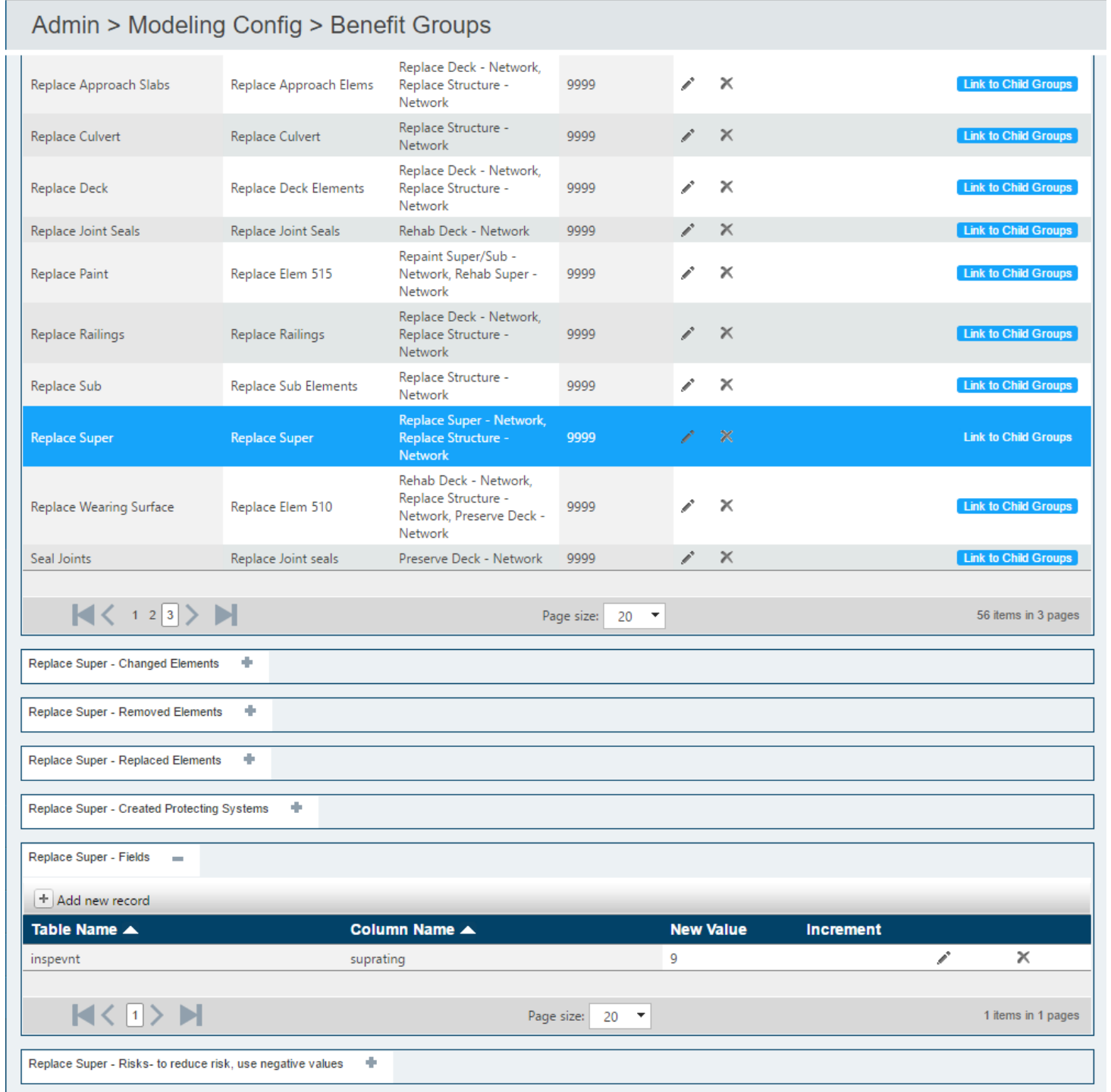
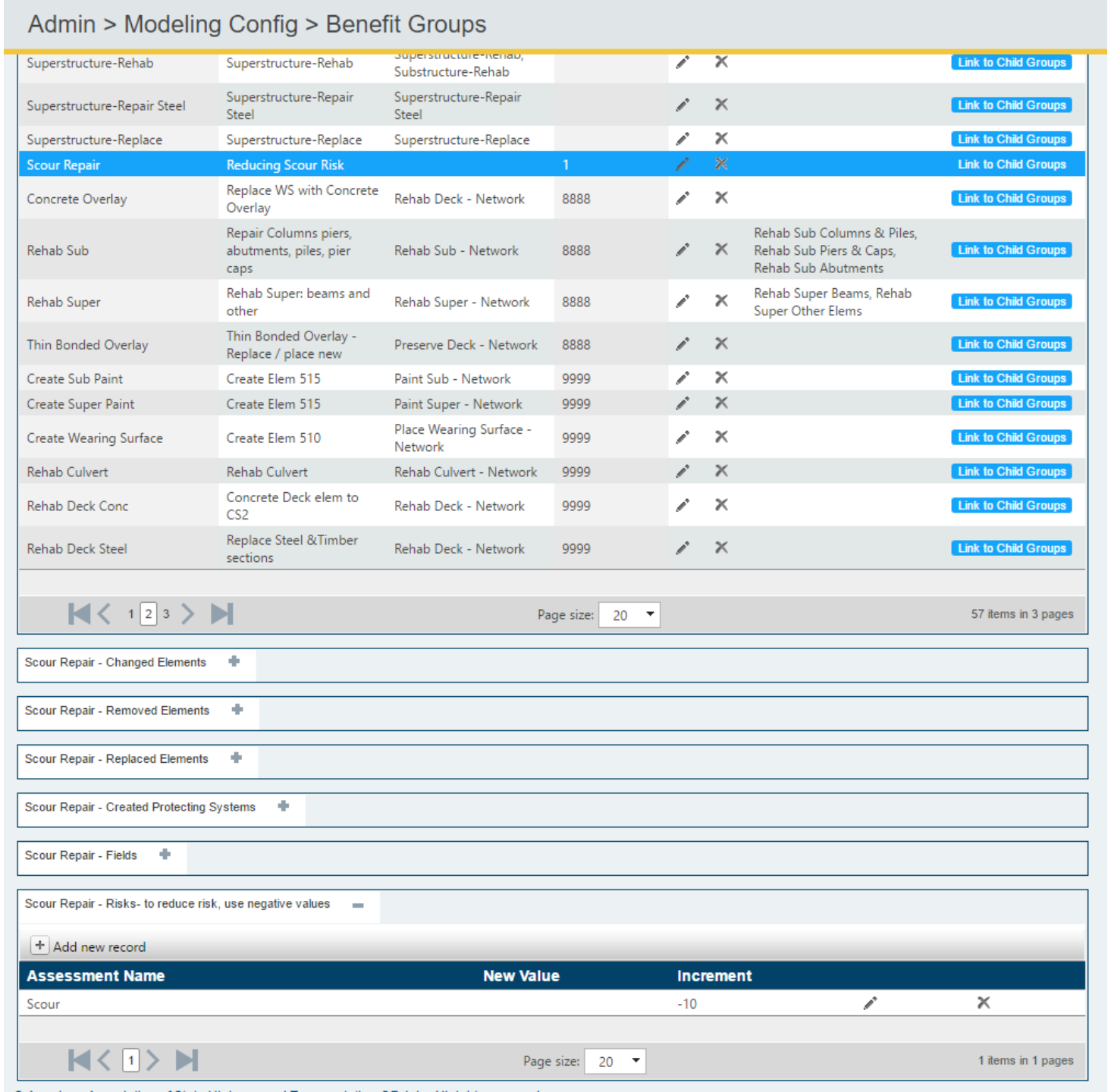
Fields
Risks

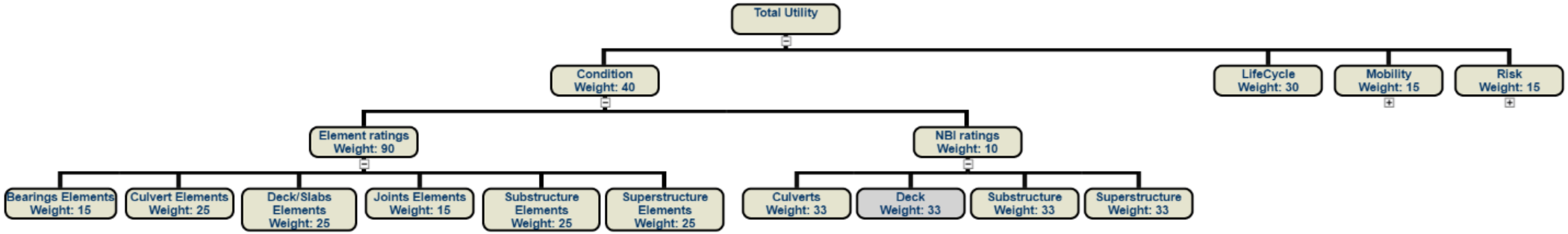


Benefits

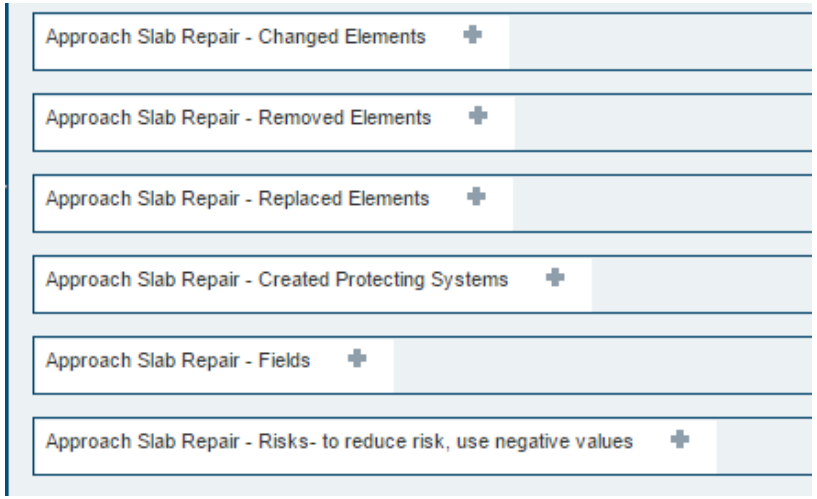
Changed Elements
Removed Elements
Replaced Elements
Created Protective Sys
Fields
Risks

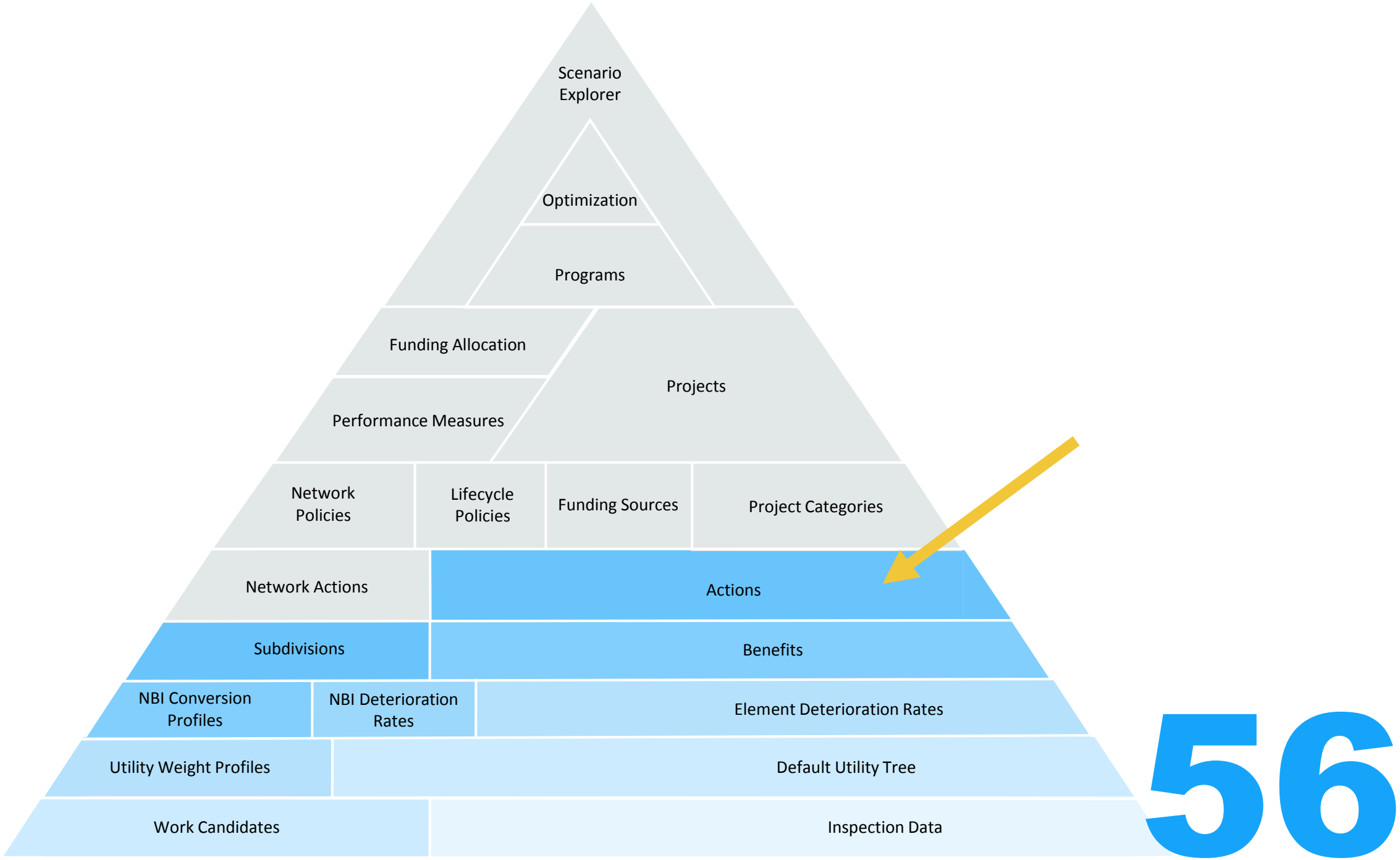


Benefits



Remember: your benefits should affect the Utility nodes.




Scenario Explorer
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Funding Sources
Project Categories
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NBI Conversion Profiles
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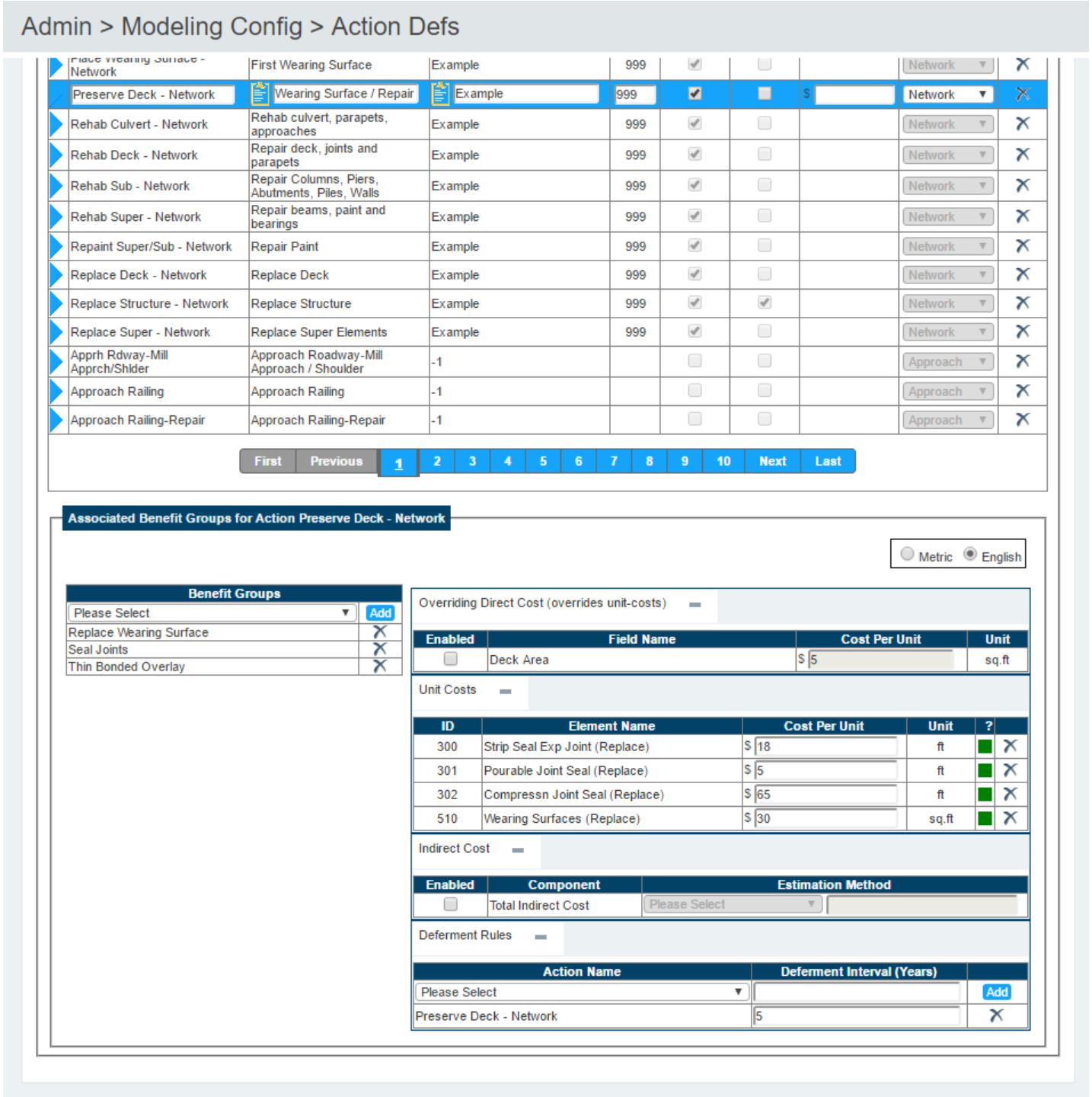
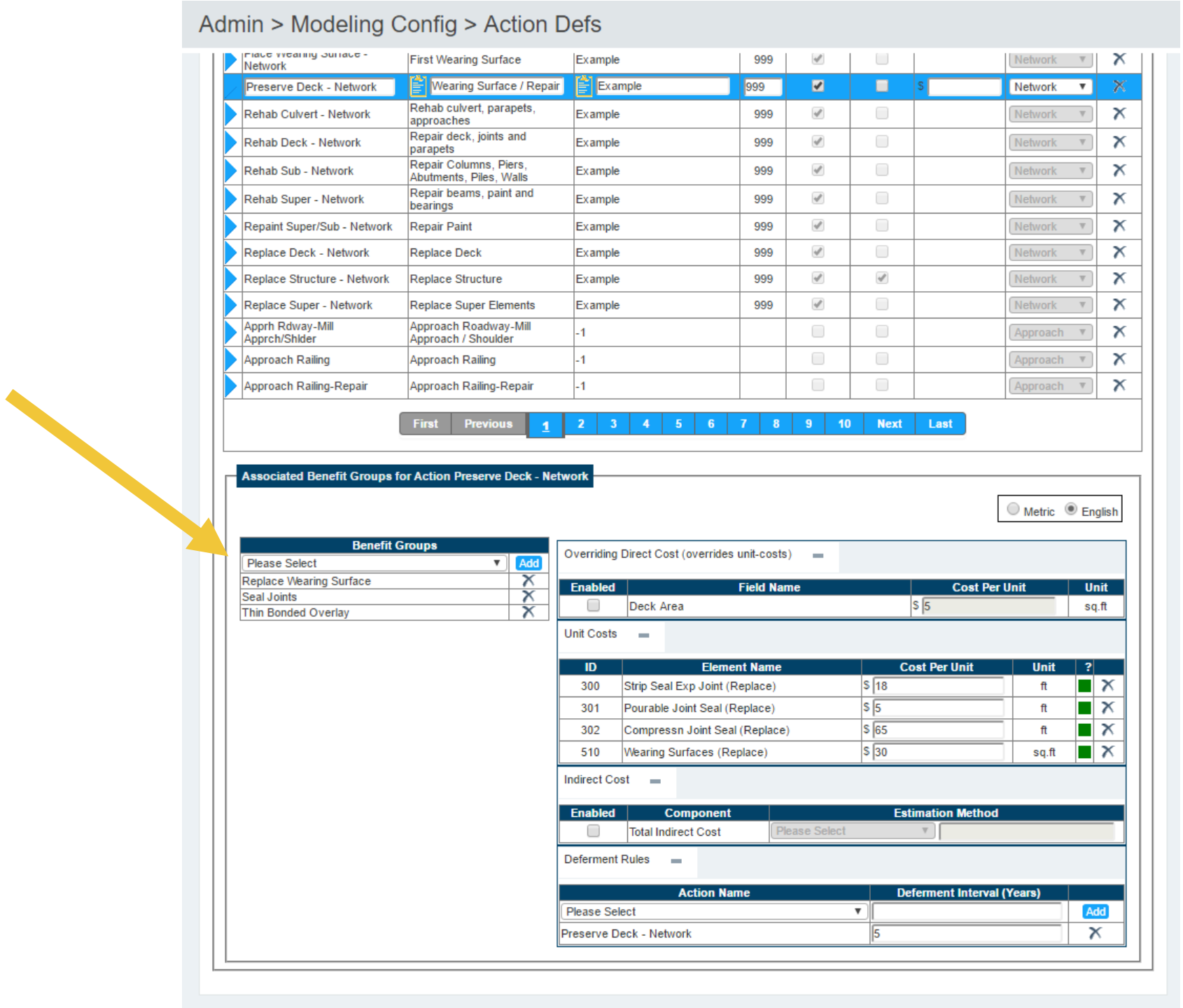
Element Deterioration Rates
Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

Actions


Admin > Modeling Config > Action Defs
Place Wearing Surface - Network
First Wearing Surface
Example
999
Network
Preserve Deck - Network
Wearing Surface / Repair
Example
999
$
Network
Rehab Culvert - Network
Rehab culvert, parapets, approaches
Example
999
Network
Rehab Deck - Network
Repair deck, joints and parapets
Example
999
Network
Rehab Sub - Network
Repair Columns, Piers, Abutments, Piles, Walls
Example
999
Network
Rehab Super - Network
Repair beams, paint and bearings
Example
999
Network
Repaint Super/Sub - Network
Repair Paint
Example
999
Network
Replace Deck - Network
Replace Deck
Example
999
Network
Replace Structure - Network
Replace Structure
Example
999
Network
Replace Super - Network
Replace Super Elements
Example
999
Network
Apprh Rdway-Mill Apprch/Shlder
Approach Roadway-Mill Approach / Shoulder
-1
Approach
Approach Railing
Approach Railing
-1
Approach
Approach Railing-Repair
Approach Railing-Repair
-1
Approach
First
Previous
1
2
3
4
5
6
7
8
9
10
Next
Last
Associated Benefit Groups for Action Preserve Deck - Network
Metric
English
Benefit Groups
Please Select
Add
Replace Wearing Surface
Seal Joints
Thin Bonded Overlay
Overriding Direct Cost (overrides unit-costs)
Enabled
Field Name
Cost Per Unit
Unit
Deck Area
$ 5
sq.ft
Unit Costs
ID
Element Name
Cost Per Unit
Unit
?
300
Strip Seal Exp Joint (Replace)
$ 18
ft
301
Pourable Joint Seal (Replace)
$ 5
ft
302
Compressn Joint Seal (Replace)
$ 65
ft
510
Wearing Surfaces (Replace)
$ 30
sq.ft
Indirect Cost
Enabled
Component
Estimation Method
Total Indirect Cost
Please Select
Deferment Rules
Action Name
Deferment Interval (Years)
Please Select
Add
Preserve Deck - Network
5

Actions


Admin > Modeling Config > Action Defs
Place Wearing Surface - Network | First Wearing Surface | Example | 999 | Network
Preserve Deck - Network | Wearing Surface / Repair | Example | 999 | $ | Network
Rehab Culvert - Network | Rehab culvert, parapets, approaches | Example | 999 | Network
Rehab Deck - Network | Repair deck, joints and parapets | Example | 999 | Network
Rehab Sub - Network | Repair Columns, Piers, Abutments, Piles, Walls | Example | 999 | Network
Rehab Super - Network | Repair beams, paint and bearings | Example | 999 | Network
Repaint Super/Sub - Network | Repair Paint | Example | 999 | Network
Replace Deck - Network | Replace Deck | Example | 999 | Network
Replace Structure - Network | Replace Structure | Example | 999 | Network
Replace Super - Network | Replace Super Elements | Example | 999 | Network
Apprh Rdway-Mill Apprch/Shlder | Approach Roadway-Mill Approach / Shoulder | -1 | Approach
Approach Railing | Approach Railing | -1 | Approach
Approach Railing-Repair | Approach Railing-Repair | -1 | Approach
First Previous 1 2 3 4 5 6 7 8 9 10 Next Last
Associated Benefit Groups for Action Preserve Deck - Network
Metric English
Benefit Groups
Please Select Add
Replace Wearing Surface
Seal Joints
Thin Bonded Overlay
Overriding Direct Cost (overrides unit-costs)
Enabled | Field Name | Cost Per Unit | Unit
Deck Area | $ 5 | sq.ft
Unit Costs
ID | Element Name | Cost Per Unit | Unit | ?
300 | Strip Seal Exp Joint (Replace) | $ 18 | ft
301 | Pourable Joint Seal (Replace) | $ 5 | ft
302 | Compressn Joint Seal (Replace) | $ 65 | ft
510 | Wearing Surfaces (Replace) | $ 30 | sq.ft
Indirect Cost
Enabled | Component | Estimation Method
Total Indirect Cost | Please Select
Deferment Rules
Action Name | Deferment Interval (Years)
Please Select Add
Preserve Deck - Network | 5

Actions


Admin > Modeling Config > Action Defs
Place Wearing Surface - Network | First Wearing Surface | Example | 999 | Network
Preserve Deck - Network | Wearing Surface / Repair | Example | 999 | $ | Network
Rehab Culvert - Network | Rehab culvert, parapets, approaches | Example | 999 | Network
Rehab Deck - Network | Repair deck, joints and parapets | Example | 999 | Network
Rehab Sub - Network | Repair Columns, Piers, Abutments, Piles, Walls | Example | 999 | Network
Rehab Super - Network | Repair beams, paint and bearings | Example | 999 | Network
Repaint Super/Sub - Network | Repair Paint | Example | 999 | Network
Replace Deck - Network | Replace Deck | Example | 999 | Network
Replace Structure - Network | Replace Structure | Example | 999 | Network
Replace Super - Network | Replace Super Elements | Example | 999 | Network
Apprh Rdway-Mill Apprch/Shlder | Approach Roadway-Mill Approach / Shoulder | -1 | Approach
Approach Railing | Approach Railing | -1 | Approach
Approach Railing-Repair | Approach Railing-Repair | -1 | Approach
First Previous 1 2 3 4 5 6 7 8 9 10 Next Last
Associated Benefit Groups for Action Preserve Deck - Network
Metric English
Benefit Groups
Please Select Add
Replace Wearing Surface
Seal Joints
Thin Bonded Overlay
Overriding Direct Cost (overrides unit-costs)
Enabled | Field Name | Cost Per Unit | Unit
Deck Area | $ 5 | sq.ft
Unit Costs
ID | Element Name | Cost Per Unit | Unit | ?
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301 | Pourable Joint Seal (Replace) | $ 5 | ft
302 | Compressn Joint Seal (Replace) | $ 65 | ft
510 | Wearing Surfaces (Replace) | $ 30 | sq.ft
Indirect Cost
Enabled | Component | Estimation Method
Total Indirect Cost | Please Select
Deferment Rules
Action Name | Deferment Interval (Years)
Please Select Add
Preserve Deck - Network | 5

Actions


Admin > Modeling Config > Action Defs
Place Wearing Surface - Network | First Wearing Surface | Example | 999 | Network
Preserve Deck - Network | Wearing Surface / Repair | Example | 999 | $ | Network
Rehab Culvert - Network | Rehab culvert, parapets, approaches | Example | 999 | Network
Rehab Deck - Network | Repair deck, joints and parapets | Example | 999 | Network
Rehab Sub - Network | Repair Columns, Piers, Abutments, Piles, Walls | Example | 999 | Network
Rehab Super - Network | Repair beams, paint and bearings | Example | 999 | Network
Repaint Super/Sub - Network | Repair Paint | Example | 999 | Network
Replace Deck - Network | Replace Deck | Example | 999 | Network
Replace Structure - Network | Replace Structure | Example | 999 | Network
Replace Super - Network | Replace Super Elements | Example | 999 | Network
Apprh Rdway-Mill Apprch/Shlder | Approach Roadway-Mill Approach / Shoulder | -1 | Approach
Approach Railing | Approach Railing | -1 | Approach
Approach Railing-Repair | Approach Railing-Repair | -1 | Approach
First Previous 1 2 3 4 5 6 7 8 9 10 Next Last
Associated Benefit Groups for Action Preserve Deck - Network
Metric English
Benefit Groups
Please Select Add
Replace Wearing Surface
Seal Joints
Thin Bonded Overlay
Overriding Direct Cost (overrides unit-costs)
Enabled | Field Name | Cost Per Unit | Unit
Deck Area | $ 5 | sq.ft
Unit Costs
ID | Element Name | Cost Per Unit | Unit | ?
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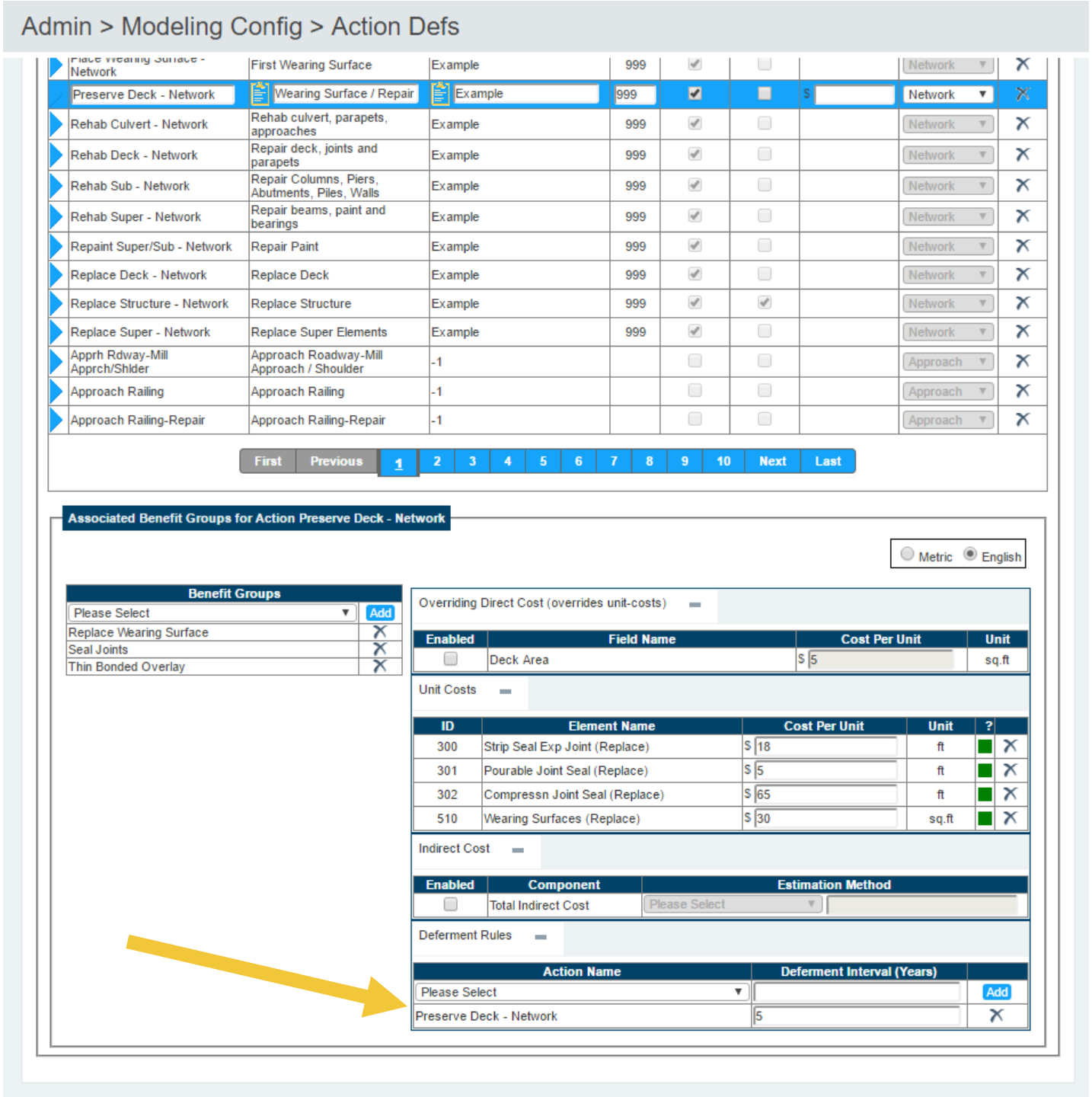
Indirect Cost
Enabled | Component | Estimation Method
Total Indirect Cost | Please Select
Deferment Rules
Action Name | Deferment Interval (Years)
Please Select Add
Preserve Deck - Network | 5

Actions


Admin > Modeling Config > Action Defs
Place Wearing Surface - Network | First Wearing Surface | Example | 999 | Network
Preserve Deck - Network | Wearing Surface / Repair | Example | 999 | $ | Network
Rehab Culvert - Network | Rehab culvert, parapets, approaches | Example | 999 | Network
Rehab Deck - Network | Repair deck, joints and parapets | Example | 999 | Network
Rehab Sub - Network | Repair Columns, Piers, Abutments, Piles, Walls | Example | 999 | Network
Rehab Super - Network | Repair beams, paint and bearings | Example | 999 | Network
Repaint Super/Sub - Network | Repair Paint | Example | 999 | Network
Replace Deck - Network | Replace Deck | Example | 999 | Network
Replace Structure - Network | Replace Structure | Example | 999 | Network
Replace Super - Network | Replace Super Elements | Example | 999 | Network
Apprh Rdway-Mill Apprch/Shlder | Approach Roadway-Mill Approach / Shoulder | -1 | Approach
Approach Railing | Approach Railing | -1 | Approach
Approach Railing-Repair | Approach Railing-Repair | -1 | Approach
First Previous 1 2 3 4 5 6 7 8 9 10 Next Last
Associated Benefit Groups for Action Preserve Deck - Network
Metric English
Benefit Groups
Please Select Add
Replace Wearing Surface
Seal Joints
Thin Bonded Overlay
Overriding Direct Cost (overrides unit-costs)
Enabled | Field Name | Cost Per Unit | Unit
Deck Area | $ 5 | sq.ft
Unit Costs
ID | Element Name | Cost Per Unit | Unit | ?
300 | Strip Seal Exp Joint (Replace) | $ 18 | ft
301 | Pourable Joint Seal (Replace) | $ 5 | ft
302 | Compressn Joint Seal (Replace) | $ 65 | ft
510 | Wearing Surfaces (Replace) | $ 30 | sq.ft
Indirect Cost
Enabled | Component | Estimation Method
Total Indirect Cost | Please Select
Deferment Rules
Action Name | Deferment Interval (Years)
Please Select Add
Preserve Deck - Network | 5

Actions


Admin > Modeling Config > Action Defs
Preserve Deck - Network
Wearing Surface / Repair
Example
999
Network
Rehab Culvert - Network
Rehab culvert, parapets, approaches
Rehab Deck - Network
Repair deck, joints and parapets
Rehab Sub - Network
Repair Columns, Piers, Abutments, Piles, Walls
Rehab Super - Network
Repair beams, paint and bearings
Repaint Super/Sub - Network
Repair Paint
Replace Deck - Network
Replace Deck
Replace Structure - Network
Replace Structure
Replace Super - Network
Replace Super Elements
Apprh Rdway-Mill Apprch/Shlder
Approach Roadway-Mill Approach / Shoulder
Approach
Approach Railing
Approach Railing-Repair
First
Previous
1
2
3
4
5
6
7
8
9
10
Next
Last
Associated Benefit Groups for Action Preserve Deck - Network
Metric
English
Benefit Groups
Please Select
Add
Replace Wearing Surface
Seal Joints
Thin Bonded Overlay
Overriding Direct Cost (overrides unit-costs)
Enabled
Field Name
Cost Per Unit
Unit
Deck Area
$ 5
sq.ft
Unit Costs
ID
Element Name
Cost Per Unit
Unit
?
300
Strip Seal Exp Joint (Replace)
$ 18
ft
301
Pourable Joint Seal (Replace)
$ 5
ft
302
Compressn Joint Seal (Replace)
$ 65
ft
510
Wearing Surfaces (Replace)
$ 30
sq.ft
Indirect Cost
Enabled
Component
Estimation Method
Total Indirect Cost
Please Select
Deferment Rules
Action Name
Deferment Interval (Years)
Please Select
Add
Preserve Deck - Network
5

Actions

Admin > Modeling Config > Action Defs

Action Defs

Search | Search

Name	Description	Notes	Order	Network Level	Bridge Replace	Required Minimum Cost	Action Type	
						$		Add
Paint Sub - Network	First Painting	Example	999	☑	☐		Network	✕
Paint Super - Network	First Painting	Example	999	☑	☐		Network	✕
Place Wearing Surface - Network	First Wearing Surface	Example	999	☑	☐		Network	✕
Preserve Deck - Network	Wearing Surface / Repair	Example	999	☑	☐	$	Network	✕
Rehab Culvert - Network	Rehab culvert, parapets, approaches	Example	999	☑	☐		Network	✕
Rehab Deck - Network	Repair deck, joints and parapets	Example	999	☑	☐		Network	✕
Rehab Sub - Network	Repair Columns, Piers, Abutments, Piles, Walls	Example	999	☑	☐		Network	✕
Rehab Super - Network	Repair beams, paint and bearings	Example	999	☑	☐		Network	✕
Repaint Super/Sub - Network	Repair Paint	Example	999	☑	☐		Network	✕
Replace Deck - Network	Replace Deck	Example	999	☑	☐		Network	✕
Replace Structure - Network	Replace Structure	Example	999	☑	☑		Network	✕
Replace Super - Network	Replace Super Elements	Example	999	☑	☐		Network	✕
Apprh Rdway-Mill Apprch/Shlder	Approach Roadway-Mill Approach / Shoulder	-1		☐	☐		Approach	✕
Approach Railing	Approach Railing	-1		☐	☐		Approach	✕
Approach Railing-Repair	Approach Railing-Repair	-1		☐	☐		Approach	✕

First | Previous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Next | Last

Associated Benefit Groups for Action Preserve Deck - Network

Metric ○ English ◉

Benefit Groups

Please Select | Add

- Replace Wearing Surface ✕
- Seal Joints ✕
- Thin Bonded Overlay ✕

Overriding Direct Cost (overrides unit-costs)

Enabled	Field Name	Cost Per Unit	Unit
☐	Deck Area	$ 5	sq.ft

Unit Costs

ID	Element Name	Cost Per Unit	Unit	?	
300	Strip Seal Exp Joint (Replace)	$ 18	ft	■	✕
301	Pourable Joint Seal (Replace)	$ 5	ft	■	✕
302	Compressn Joint Seal (Replace)	$ 65	ft	■	✕
510	Wearing Surfaces (Replace)	$ 30	sq.ft	■	✕

Indirect Cost

Enabled	Component	Estimation Method
☐	Total Indirect Cost	Please Select

Deferment Rules

Actions

Admin > Modeling Config > Action Defs

Action Defs

Search | Search

	Name	Description	Notes	Order	Network Level	Bridge Replace	Required Minimum Cost	Action Type	
							$		Add
	Paint Sub - Network	First Painting	Example	999	☑	☐		Network	
	Paint Super - Network	First Painting	Example	999	☑	☐		Network	
	Place Wearing Surface - Network	First Wearing Surface	Example	999	☑	☐		Network	
	Preserve Deck - Network	Wearing Surface / Repair	Example	999	☑	☐	$	Network	
	Rehab Culvert - Network	Rehab culvert, parapets, approaches	Example	999	☑	☐		Network	
	Rehab Deck - Network	Repair deck, joints and parapets	Example	999	☑	☐		Network	
	Rehab Sub - Network	Repair Columns, Piers, Abutments, Piles, Walls	Example	999	☑	☐		Network	
	Rehab Super - Network	Repair beams, paint and bearings	Example	999	☑	☐		Network	
	Repaint Super/Sub - Network	Repair Paint	Example	999	☑	☐		Network	
	Replace Deck - Network	Replace Deck	Example	999	☑	☐		Network	
	Replace Structure - Network	Replace Structure	Example	999	☑	☑		Network	
	Replace Super - Network	Replace Super Elements	Example	999	☑	☐		Network	
	Apprh Rdway-Mill Apprch/Shlder	Approach Roadway-Mill Approach / Shoulder	-1		☐	☐		Approach	
	Approach Railing	Approach Railing	-1		☐	☐		Approach	
	Approach Railing-Repair	Approach Railing-Repair	-1		☐	☐		Approach	

First | Previous | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Next | Last

Associated Benefit Groups for Action Preserve Deck - Network

Metric | English

Benefit Groups

Please Select | Add

- Replace Wearing Surface
- Seal Joints
- Thin Bonded Overlay

Overriding Direct Cost (overrides unit-costs)

Enabled	Field Name	Cost Per Unit	Unit
☐	Deck Area	$ 5	sq.ft

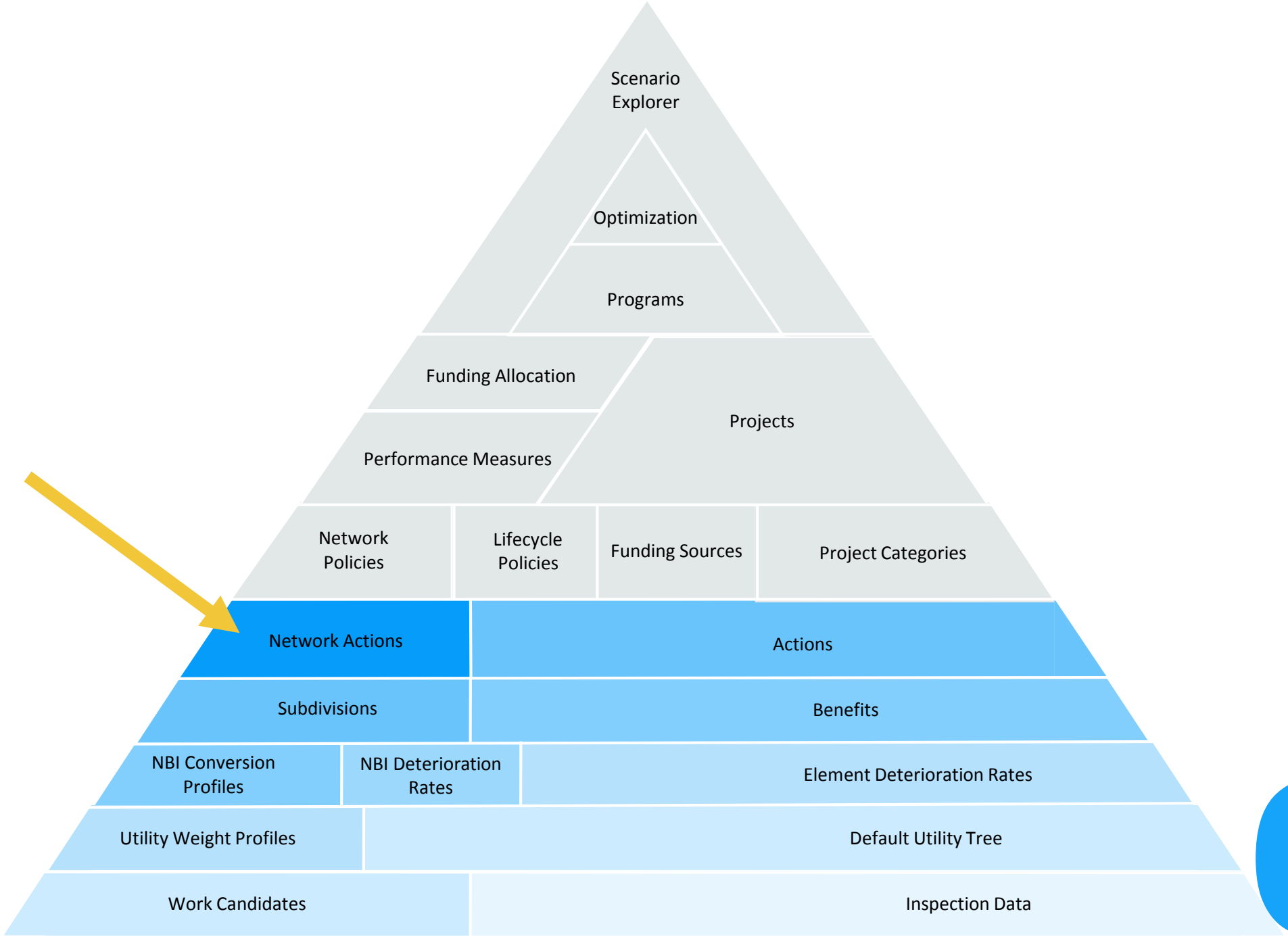
Unit Costs

ID	Element Name	Cost Per Unit	Unit	?	
300	Strip Seal Exp Joint (Replace)	$ 18	ft	■	
301	Pourable Joint Seal (Replace)	$ 5	ft	■	
302	Compressn Joint Seal (Replace)	$ 65	ft	■	
510	Wearing Surfaces (Replace)	$ 30	sq.ft	■	

Indirect Cost

Enabled	Component	Estimation Method
☐	Total Indirect Cost	Please Select

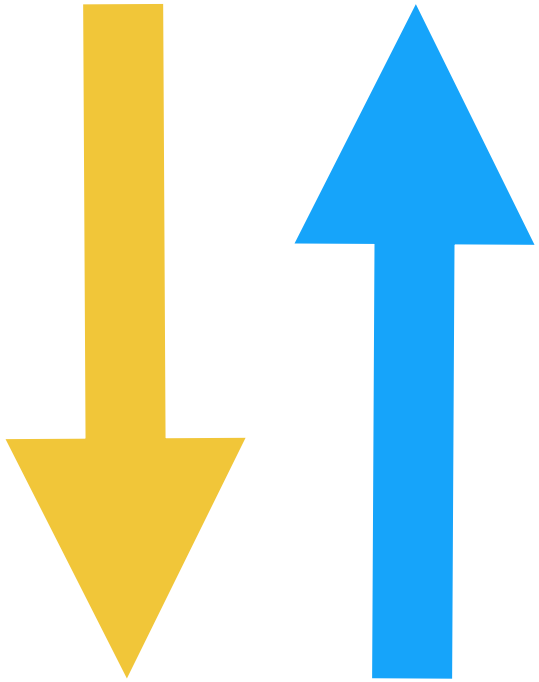
Deferment Rules


Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
Element Deterioration Rates
Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

Crash Course in Modeling

Top Down Approach:
Use an average project and apply it to all bridges in the network.

Bottom Up Approach:
Find the optimal approach for each bridge individually, then add up to a network program.



Network Actions

Crash Course in Modeling

Bottom Up Approach:
Find the optimal approach for each bridge individually, then add up to a network program.

Wearing Surface	Deck	Ancillary	Superstructure	Substructure
Do Nothing	Do Nothing	Do Nothing	Do Nothing	Do Nothing
Healer Sealer	Pothole Patching	Parapet Seal	Spot Paint Repair	Backwall repair
Thin Bonded Polymer Overlay	Hydro-Demo	Parapet Repair	Clean & Overcoat	Column repair
Asphalt Overlay w/ Membrane	Deck Replacement	Replace parapets	Repaint Beams	Column Wrap
Polyester Concrete Overlay		Clean joints	Beam Repair	Bent Repair
		Seal Joints	Bearing Replacement	Bent Wrap
		Replace Joint Seal		
		Close Joint		

$$2^{29} = 536{,}870{,}912 \; {}^{combinations}/_{bridge}$$

For a network of 5,000 bridges it was estimated this would take about 4,256 years to calculate.

Network Actions

Crash Course in Modeling

Top Down Approach:
Use an average project and apply it to all bridges in the network.

Preserve Deck
Thin Bonded Polymer
Pothole Patching
Parapet Sealing
Seal Joints

Rehab Deck
Asphalt w/ membrane
Hydro-Demo
Parapet repair
Close Joints

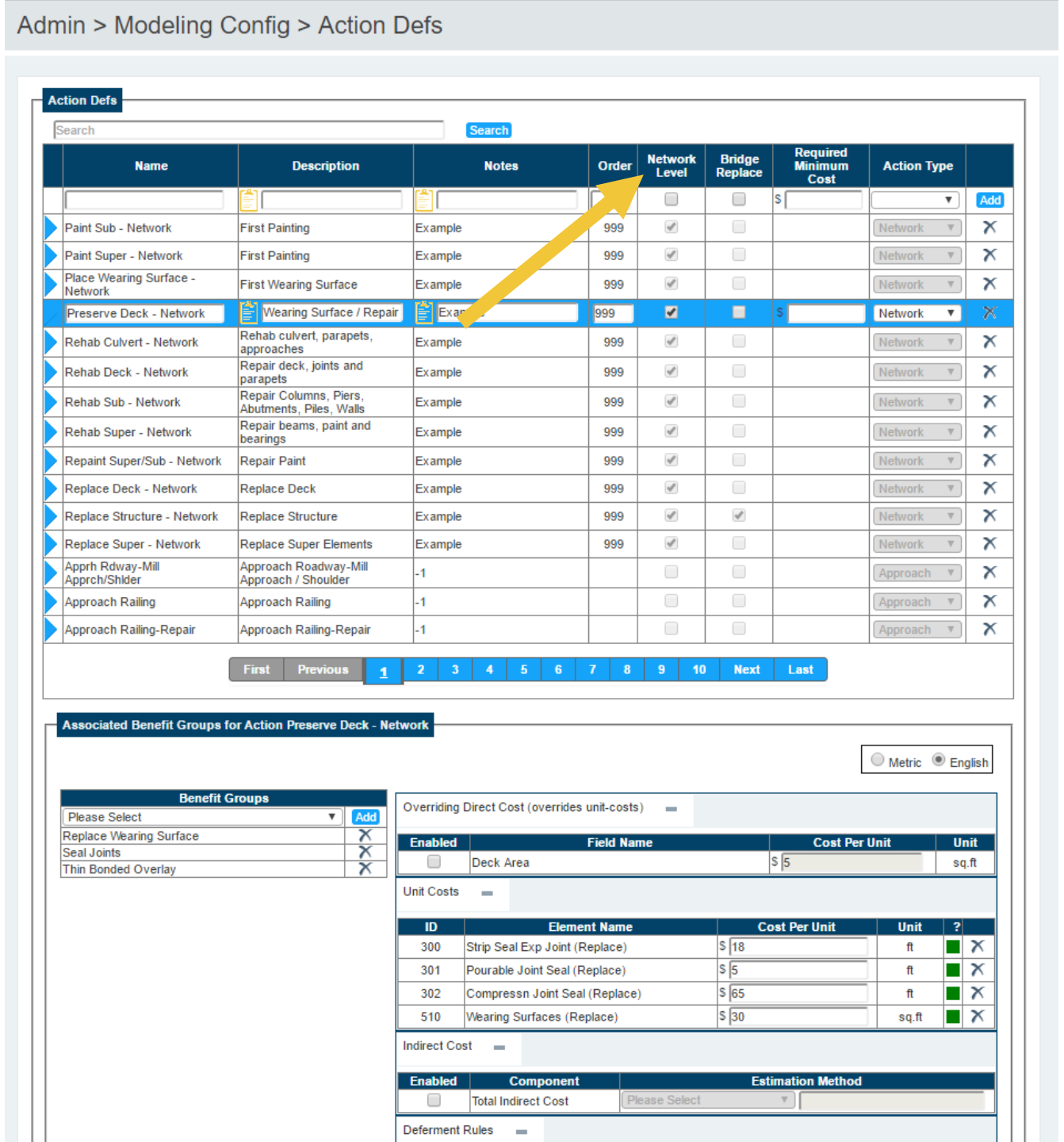
Replace Deck

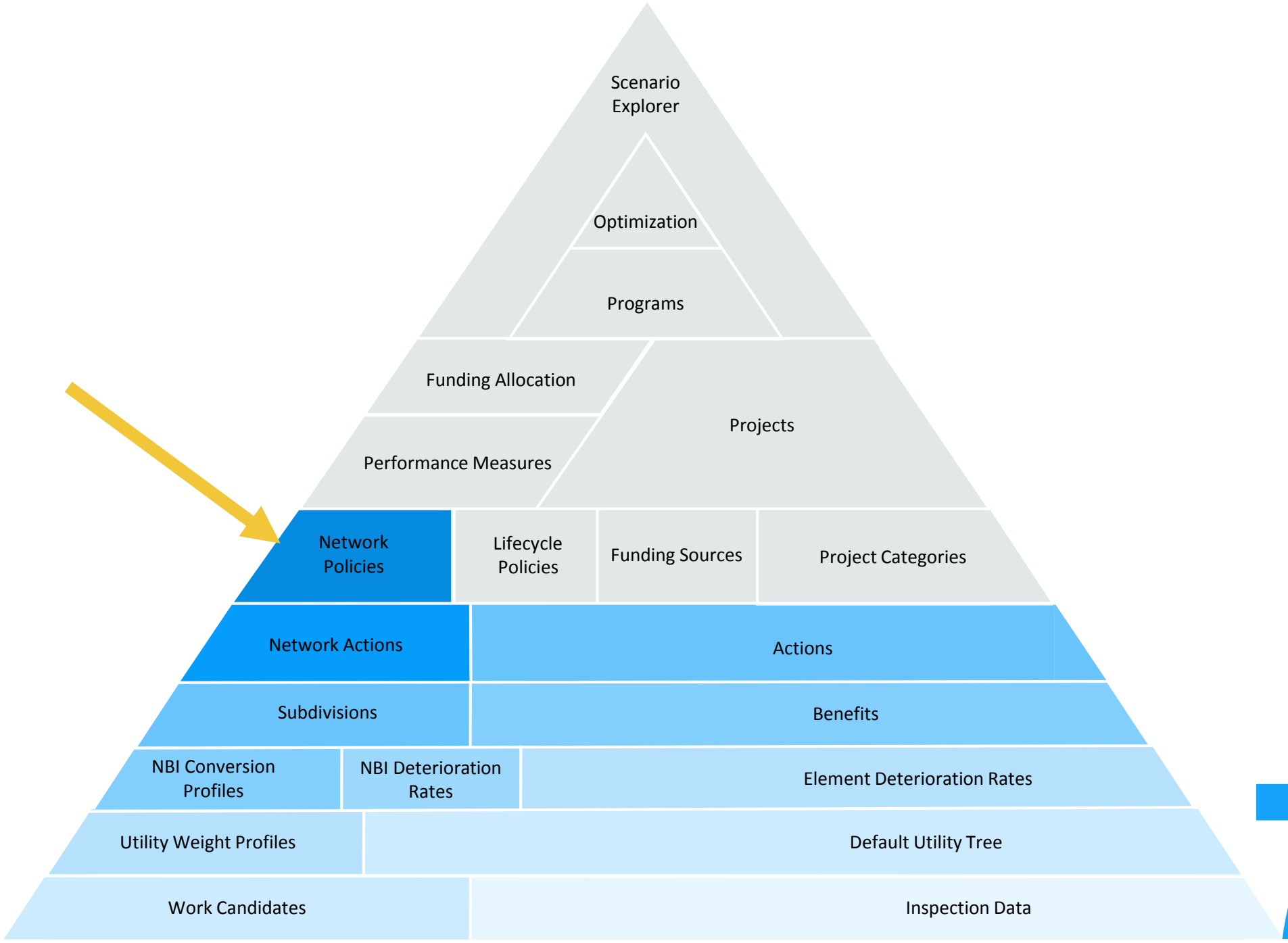
Deck	Superstructure	Substructure
Do Nothing	Do Nothing	Do Nothing
Preserve Deck	Preserve Super	Preserve Sub
Rehab Deck	Rehab Super	Rehab Sub
Replace Deck	Replace Super	Replace Sub

$$4 \times 4 \times 4$$

$$64\ combinations/bridge$$

Network Actions




Scenario Explorer
Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
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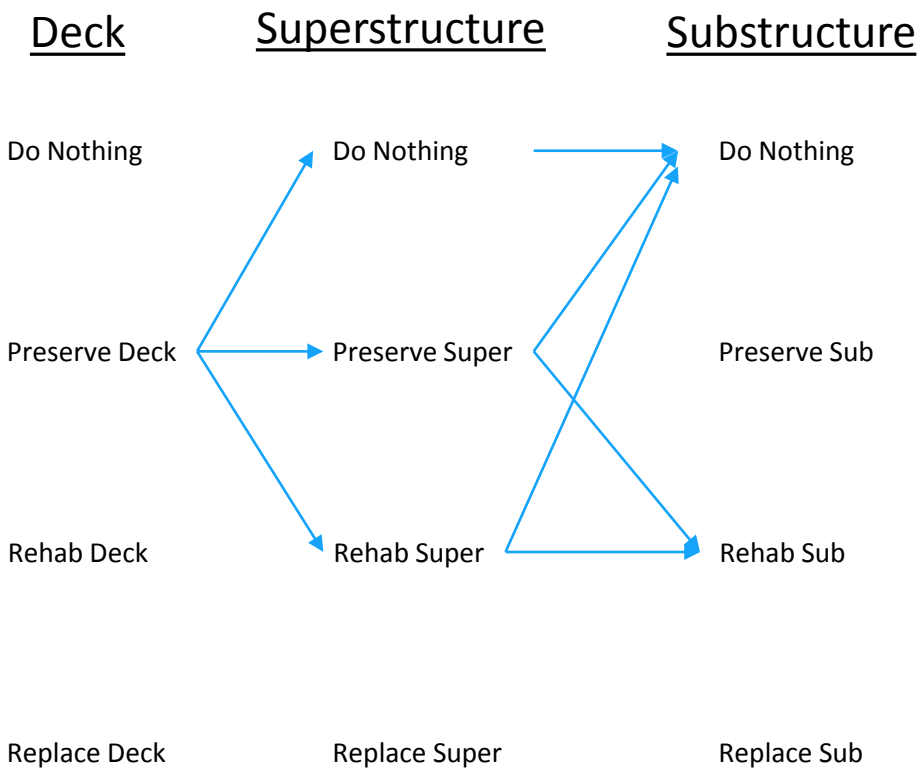
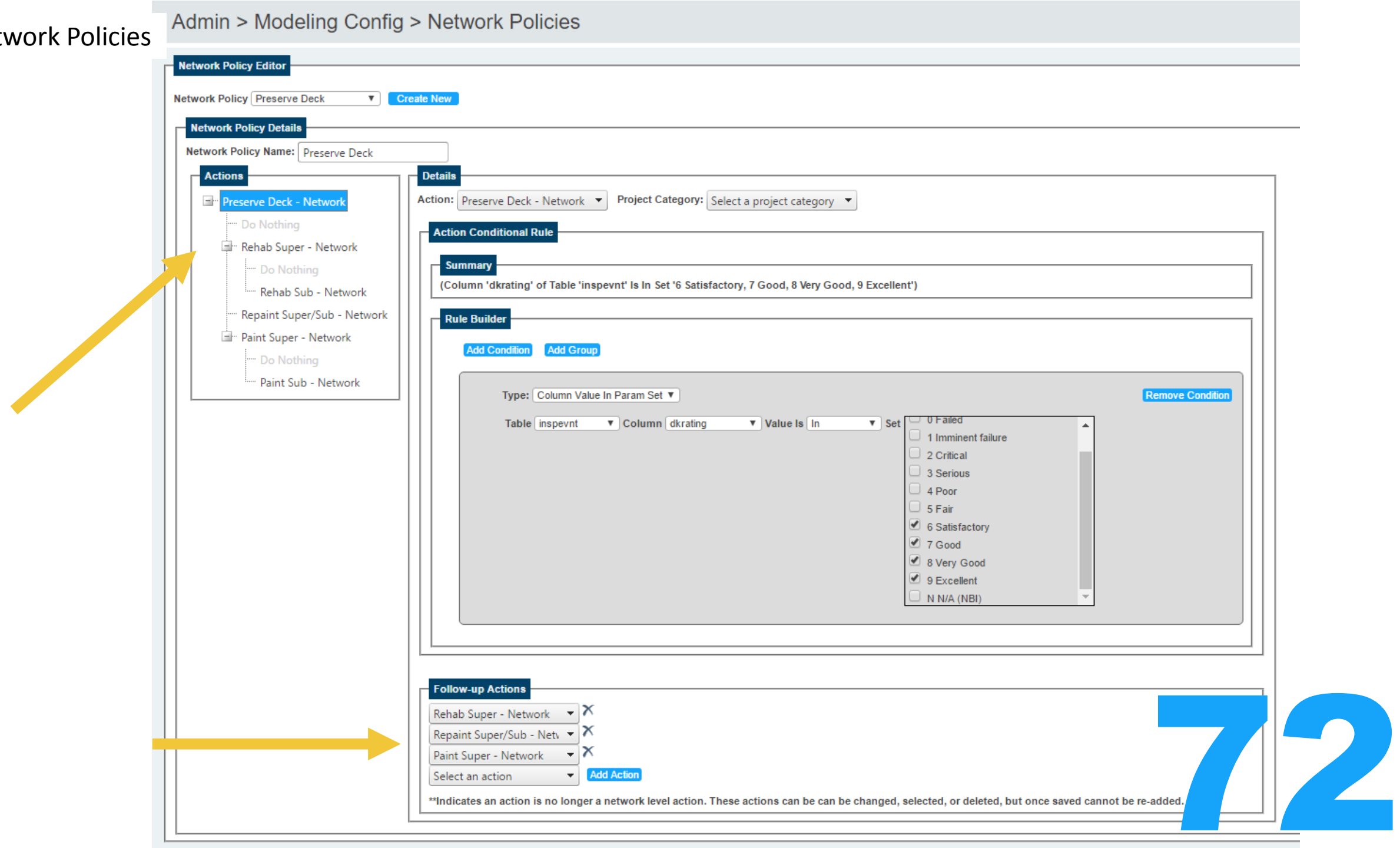
Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

Network Policies



Network Policies



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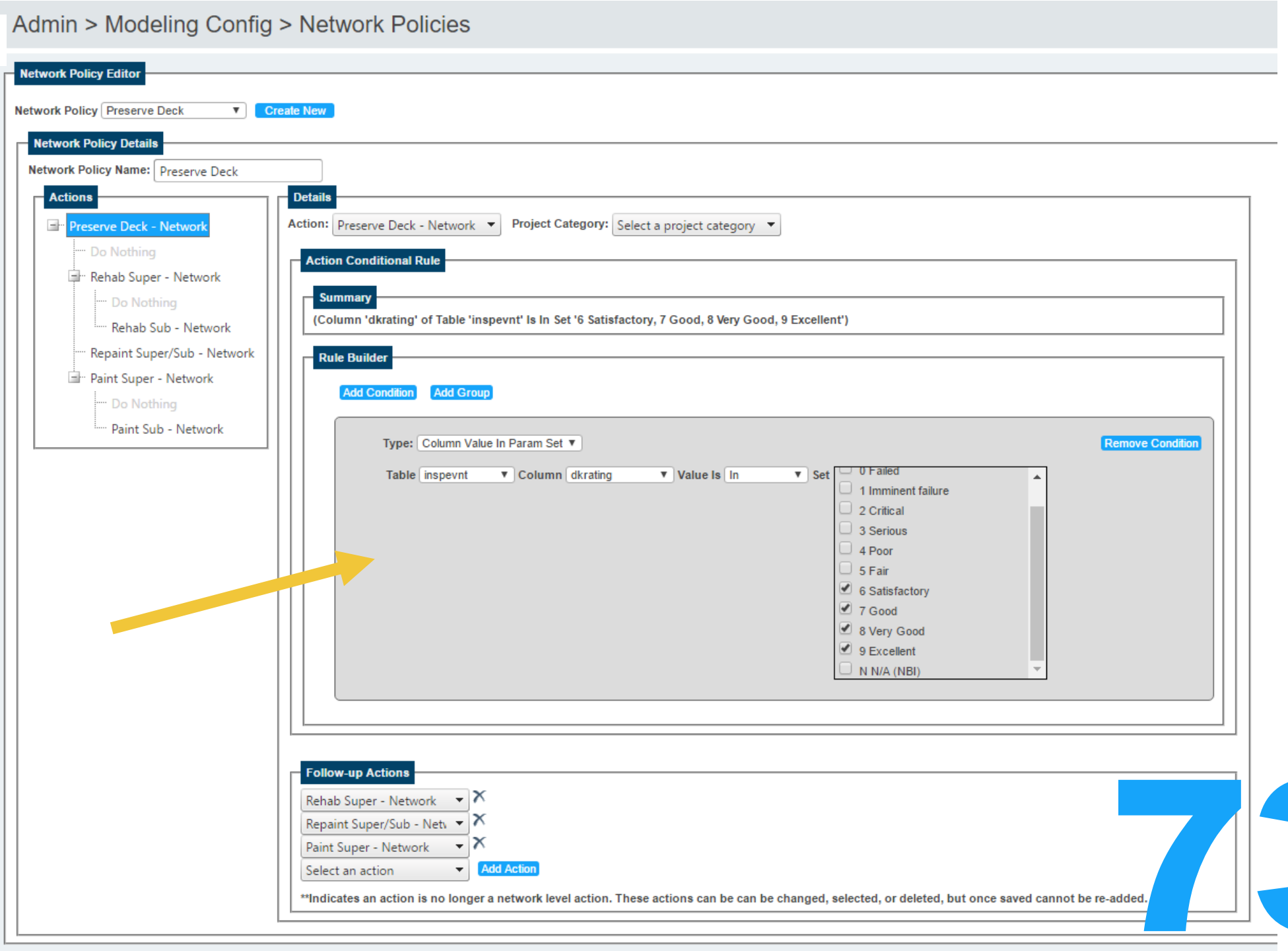
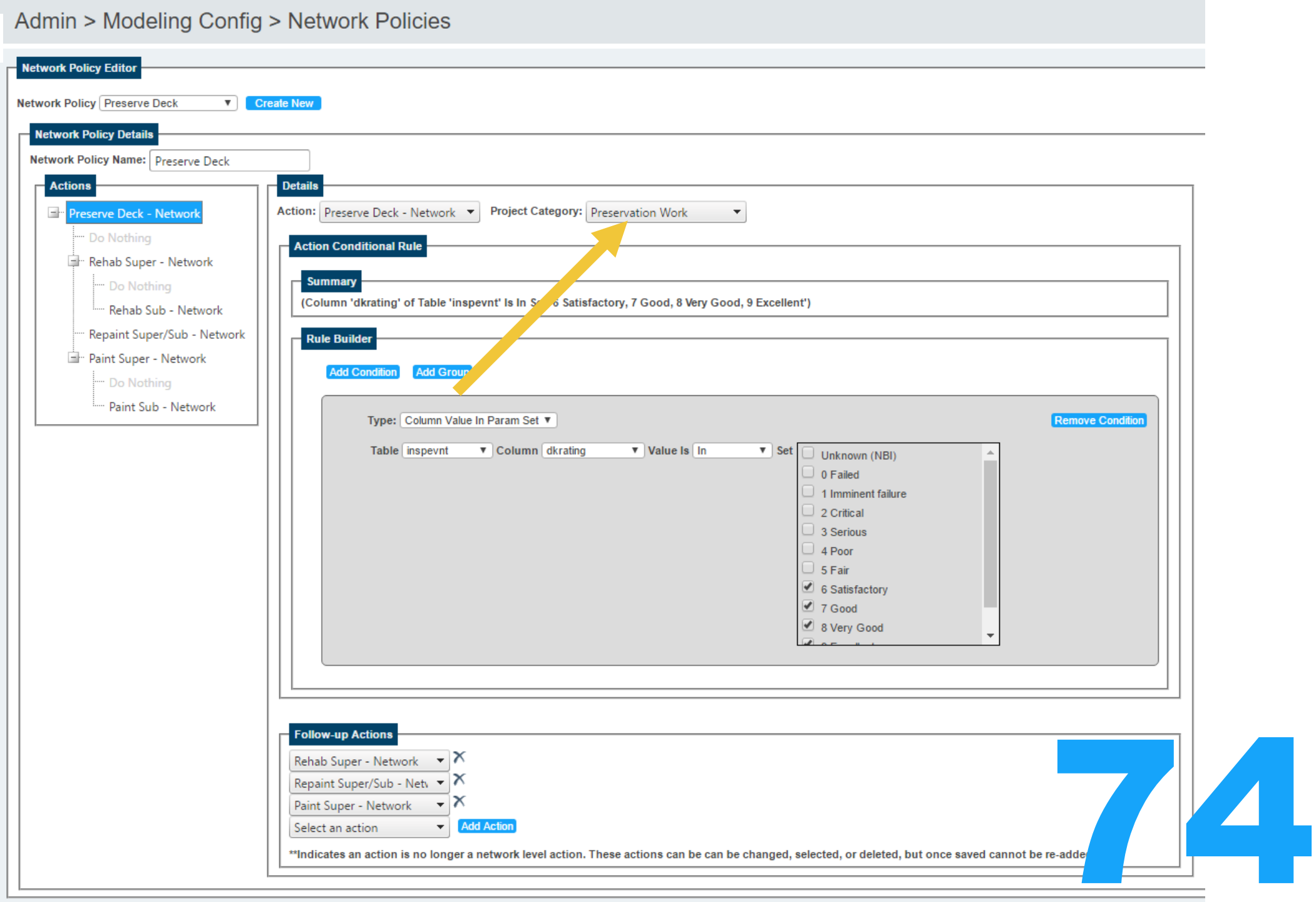
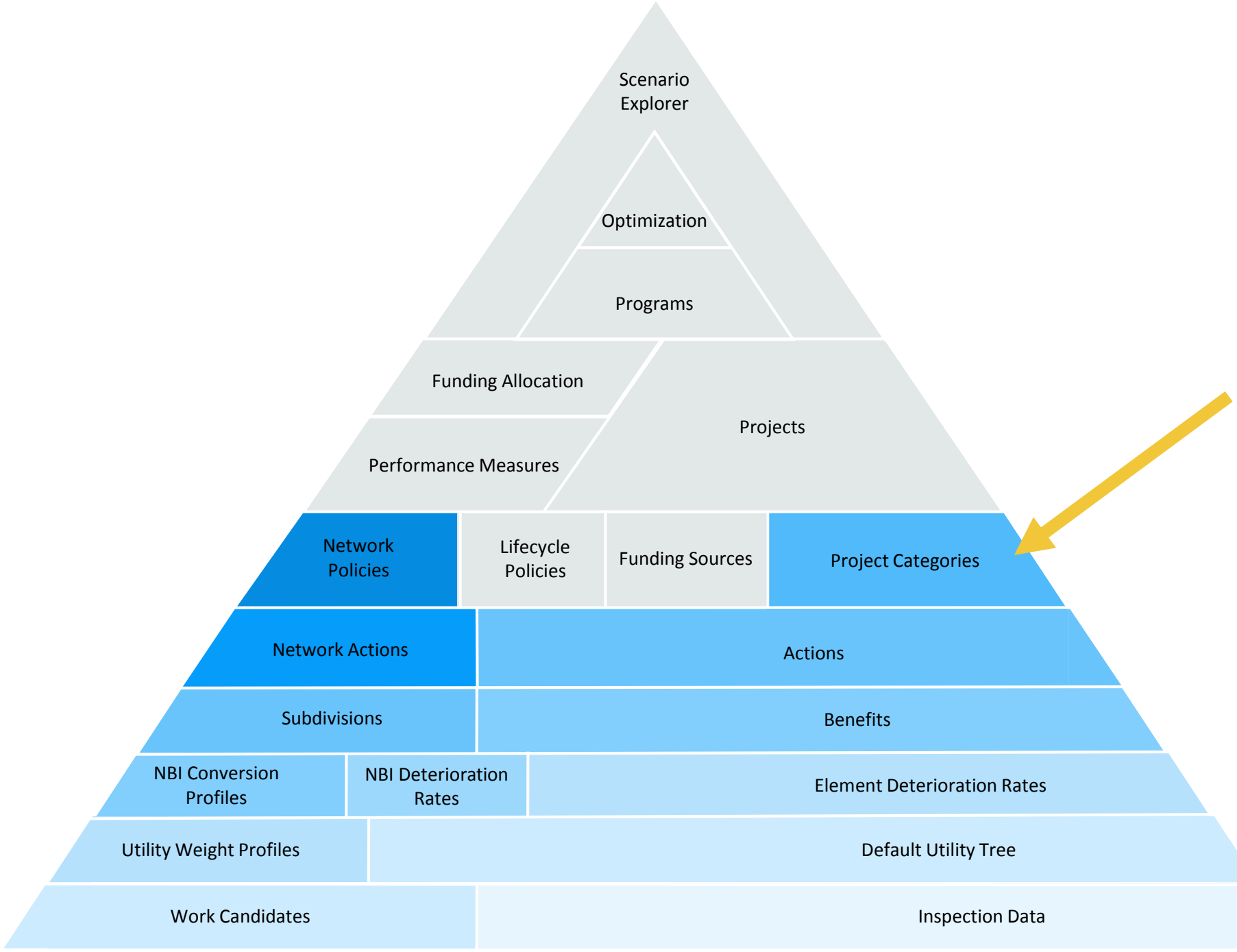


Network Policies

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Optimization
Programs
Funding Allocation
Projects
Performance Measures
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
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Benefits
NBI Conversion Profiles
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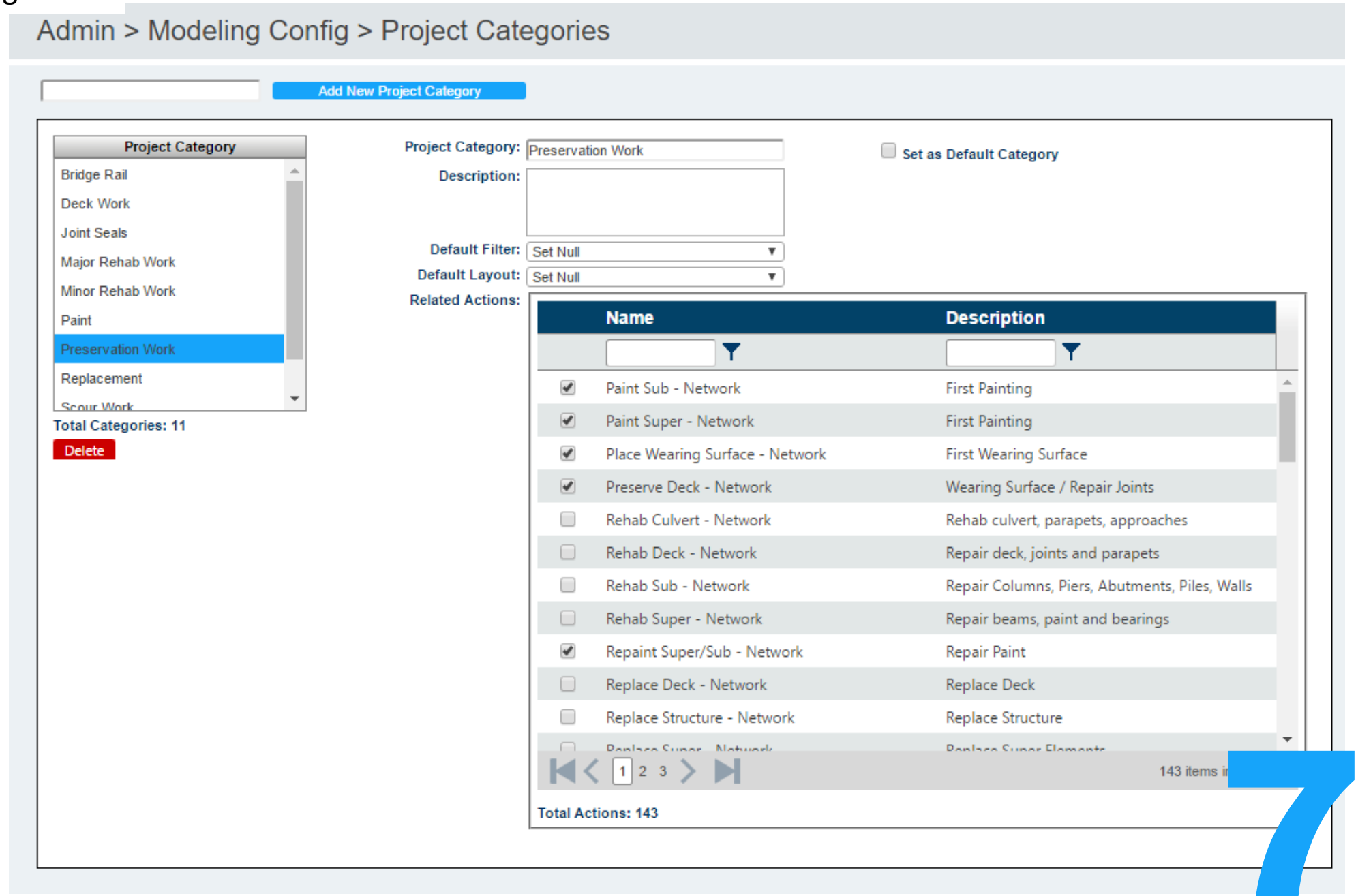
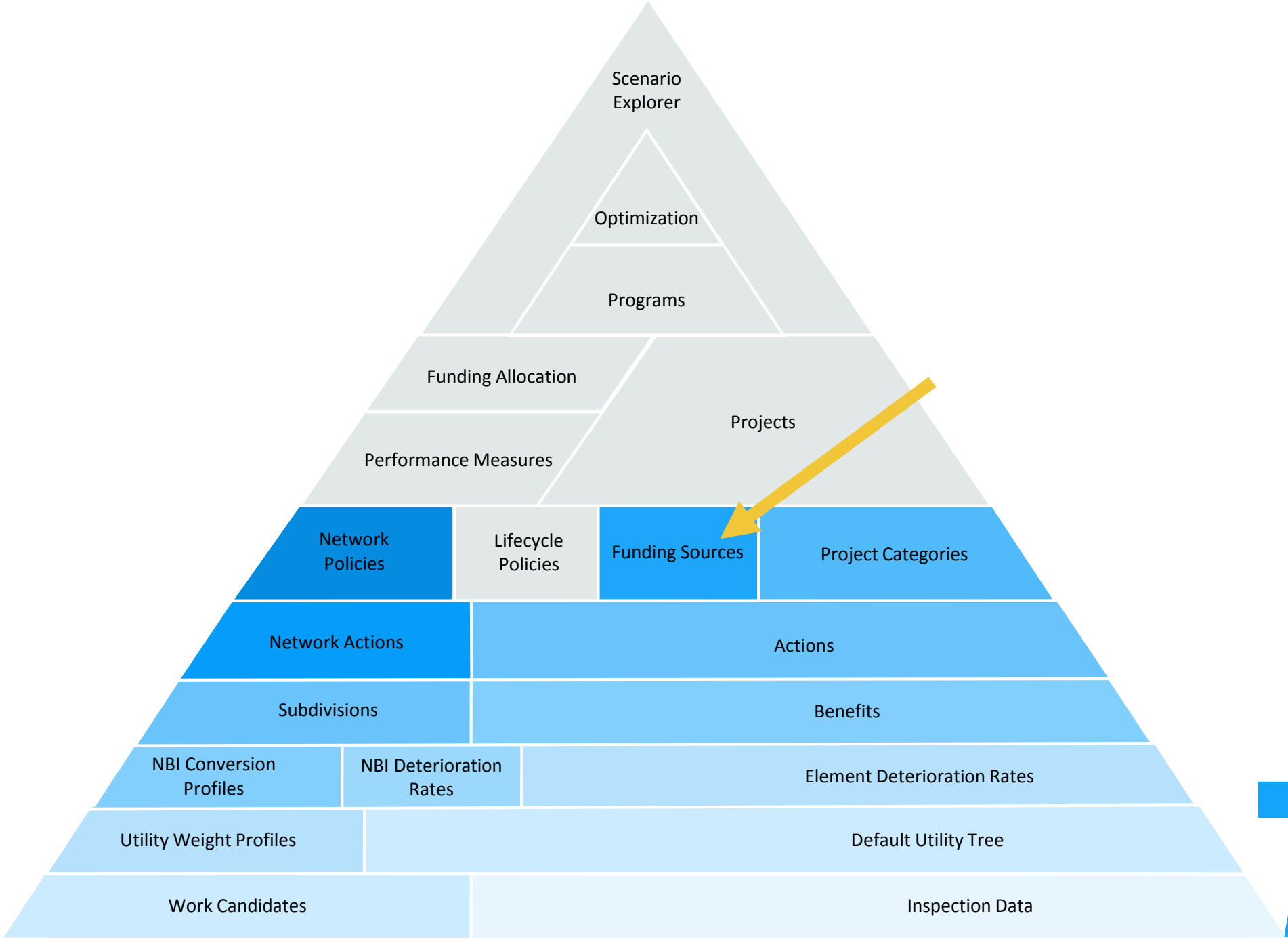
Work Candidates
Inspection Data

Project Categories




Scenario Explorer
Optimization
Programs
Funding Allocation
Performance Measures
Projects
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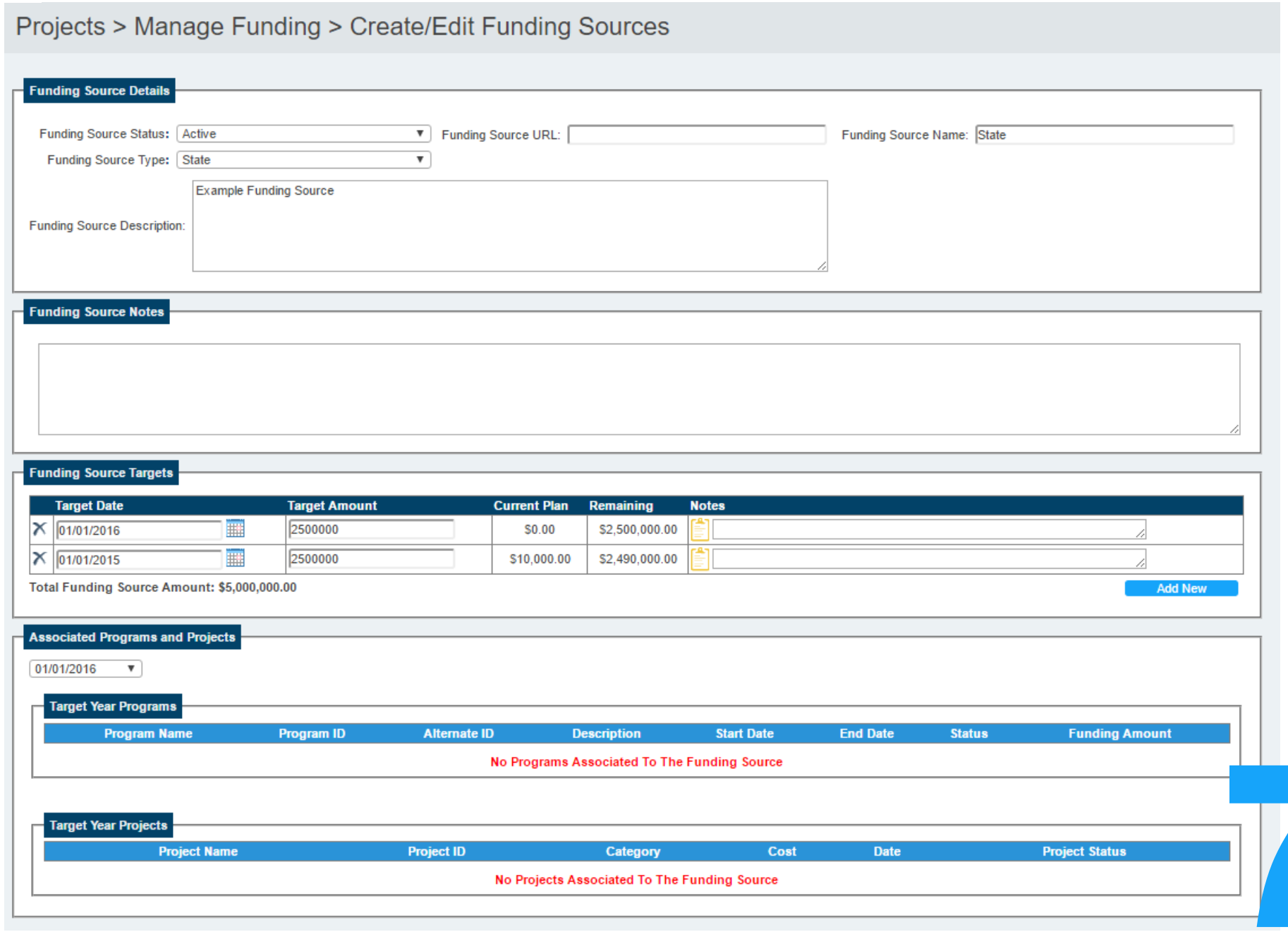
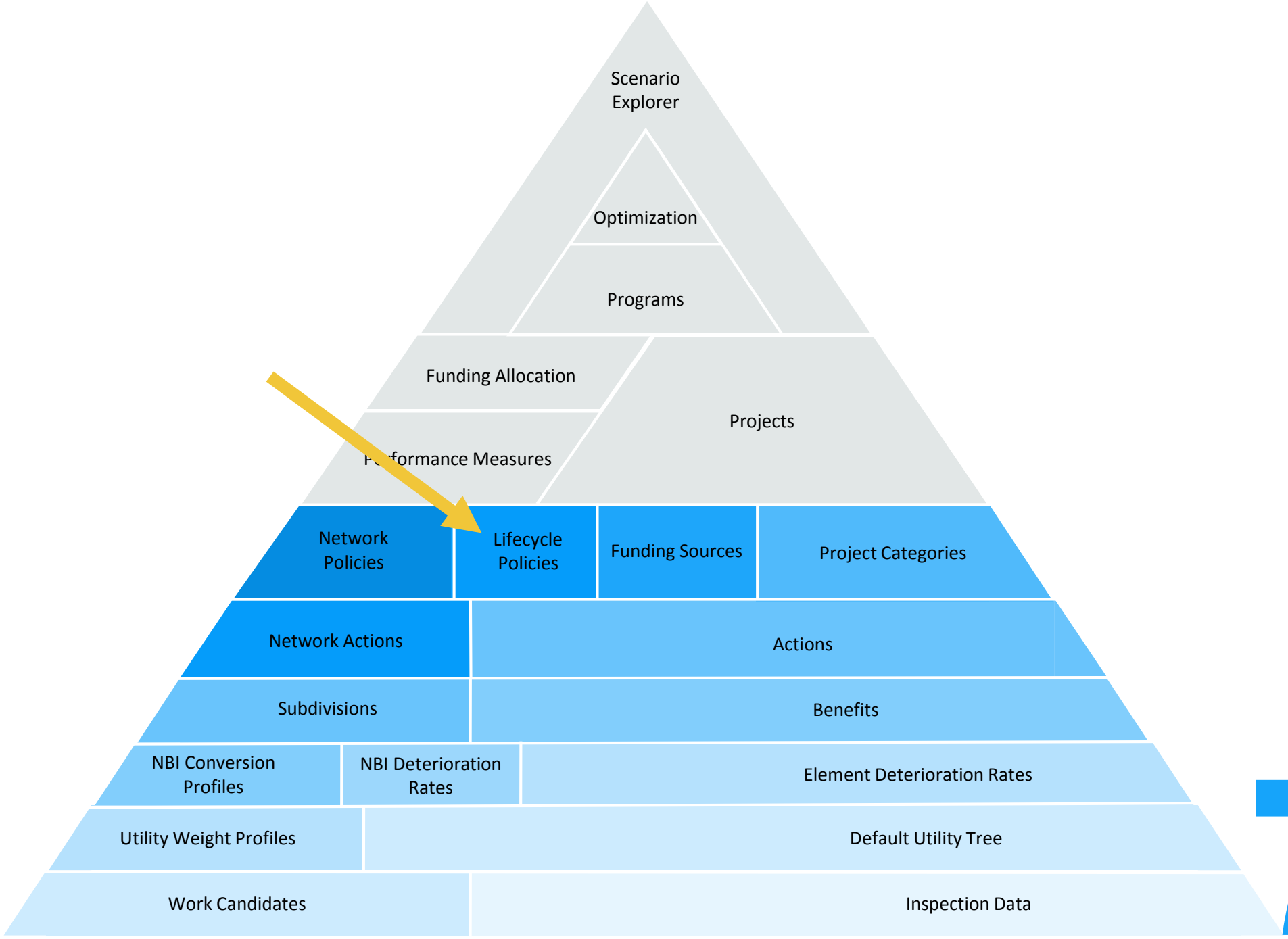
Funding Sources

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Optimization
Programs
Funding Allocation
Performance Measures
Projects
Network Policies
Lifecycle Policies
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Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
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Work Candidates
Inspection Data

Lifecycle Policies

Admin > Modeling Config > LCCA Policy Rules

Rule Editor

Policy: Deck Policy ▼ Rule: Preserve Deck ▼ Create New

Rule Details

Name: Preserve Deck Resulting Action: Preserve Deck - Network ▼

Summary

((Health Index of Category 'Decks/Slabs' Must Be Greater Than Or Equal To Number Value 50 AND Health Index of Category 'Decks/Slabs' Must Be Less Than Or Equal To Number Value 90) AND (Health Index of Element '510 - Wearing Surfaces' Must Be Less Than Or Equal To Number Value 30))

Rule Builder

Add Condition Add Group

Group

Add Condition Add Group Remove Group

Type: Category Health Index ▼ Type: Number Value ▼

Field Decks/Slabs ▼ As Number Must Be Greater Than or Equal To ▼ Number Value 50 Remove Condition

AND ▼

Type: Category Health Index ▼ Type: Number Value ▼

Field Decks/Slabs ▼ As Number Must Be Less Than or Equal To ▼ Number Value 90 Remove Condition

AND ▼

Group

Add Condition Add Group Remove Group

Type: Element Health Index ▼ Type: Number Value ▼

Field 510 - Wearing Surfaces ▼ As Number Must Be Less Than or Equal To ▼ Number Value 30 Remove Condition

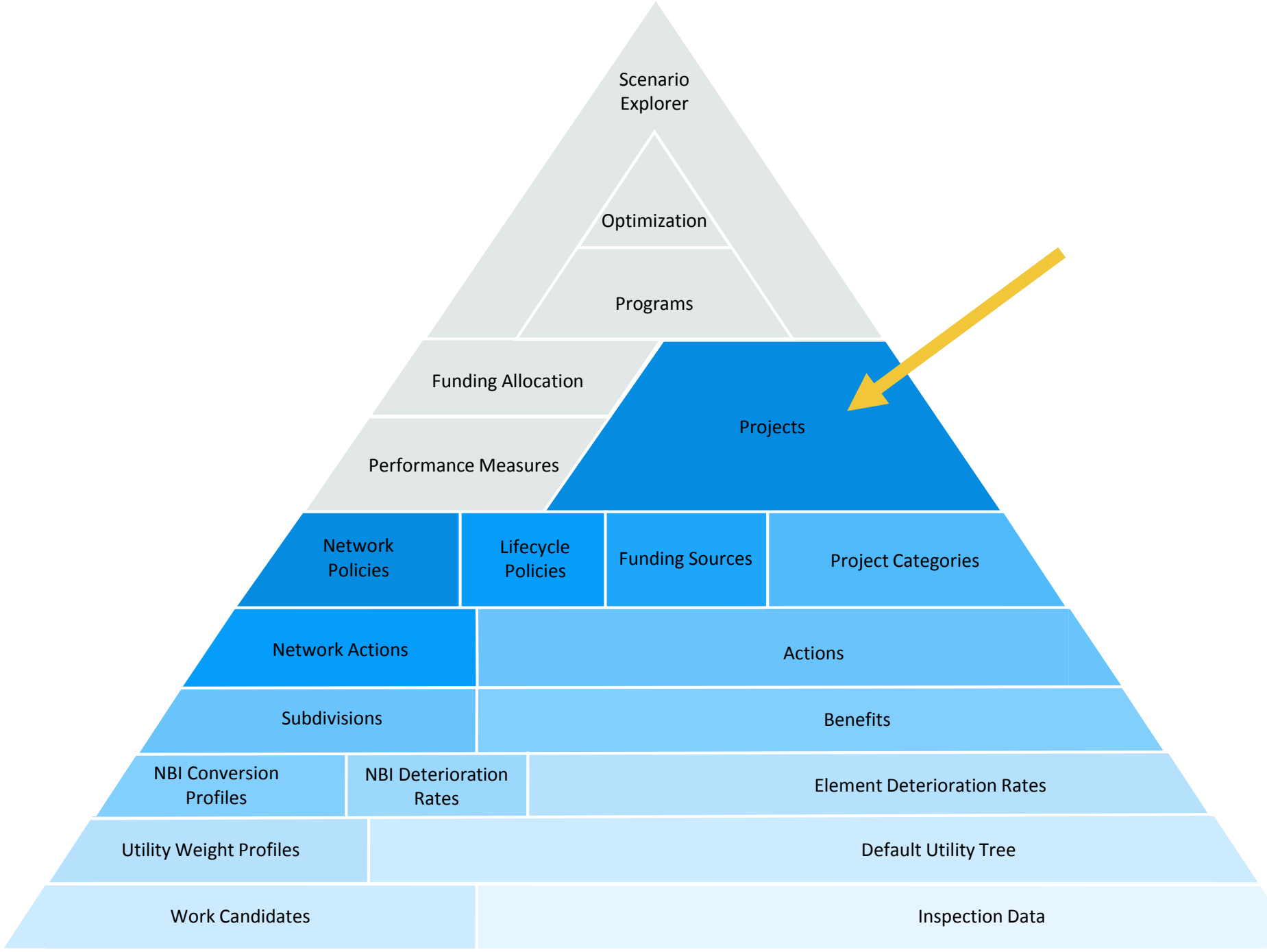
Lifecycle Policies

Admin > Modeling Config > LCCA Assign Policies

Bridge List

	Bridge ID	District	County	Bridge Policy: No Policy Selected — Assign To Selected / Assign To All	Culvert Policy: No Policy Selected — Assign To Selected / Assign To All	Deck Policy: No Policy Selected — Assign To Selected / Assign To All	Substructure Policy: No Policy Selected — Assign To Selected / Assign To All	Superstructure Policy: No Policy Selected — Assign To Selected / Assign To All
☐	000002	Division 10	Walker	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000003	Division 10	Walker	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000004	Division 10	Walker	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000005	Division 10	Lamar	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000006	Division 6	Lee	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000007	Division 1	Dekalb	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000008	Division 5	Bibb	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000009	Division 2	Morgan	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000010	Division 5	Sumter	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000011	Division 6	Autauga	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000012	Division 1	Jackson	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000013	Division 1	Jackson	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000014	Division 1	Madison	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000015	Division 1	Jackson	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000016	Division 1	Madison	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000017	Division 3	Jefferson	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000018	Division 1	Madison	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000019	Division 1	Madison	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000020	Division 1	Dekalb	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000021	Division 1	Dekalb	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000022	Division 1	Dekalb	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000023	Division 1	Dekalb	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000024	Division 3	Shelby	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000025	Division 3	Shelby	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy
☐	000026	Division 3	Jefferson	Structure Overall	Culvert policy	Deck Policy	Substructure Policy	Superstructure Policy

First | Previous | 1 | 2 | Next | Last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Programs
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Network Policies
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Actions
Subdivisions
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Inspection Data

Projects

LCCA

Reverse Calculation

Bridge Analysis

Needs List

Bridge 1C 700 Name: I-215 Fly over Ramp Br Facility Carried (007): RP.I215NB TO I80WB Feature Intersected (006A): I-215,I-80 & 4 INT.RAMF Metric English

Analysis > LCCA

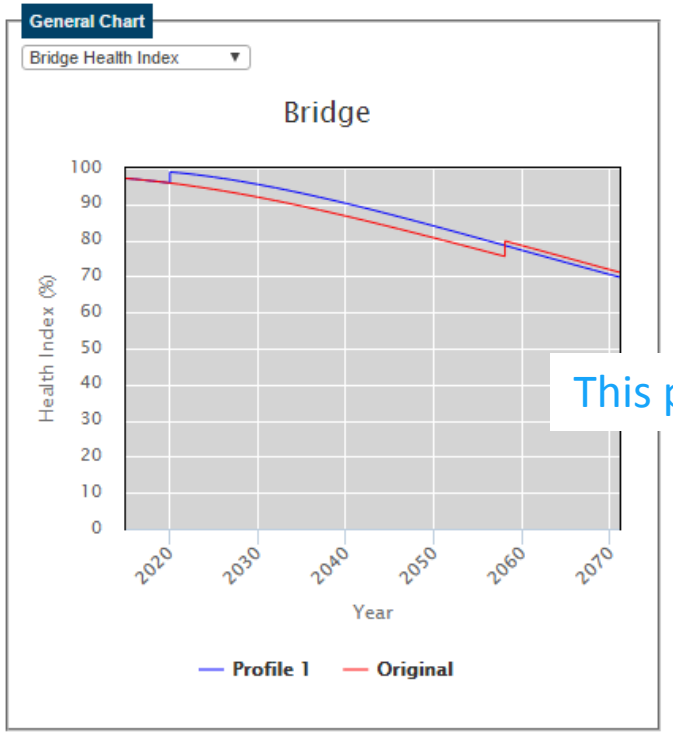
Culvert Policy: Culvert policy

Index	Date	Year	Action Name	Orig. Cost	NPV Cost	Prior Action H.I.
1	2020	5	Column Repair, Profile Rotomilling	$40,000	$34,192	95.87
Residual:				$9,027,183	$1,044,043	
Agency Life-Cycle Cost:					$34,192	
User Life-Cycle Cost:					$0	
Total Life-Cycle Cost:					($1,009,851)	

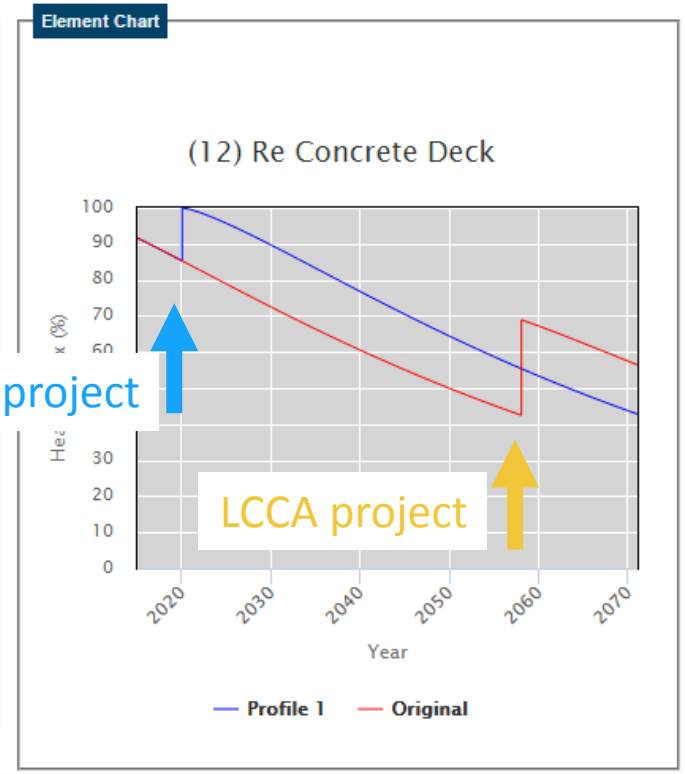
Charts

General Chart

Bridge Health Index



Element Chart



This project

LCCA project

Effects on Each Element

Year: 2016

Element	Str. Unit	Env.	Quantity	Units
(12) Re Concrete Deck	101	Sev.(4)	43,129.70	sq.ft
(107) Steel Opn Girder/Beam	101	Low(2)	5,687.30	ft
(161) Stl Pin Pin/Han both	101	Sev.(4)	16.00	each
(205) Re Conc Column	101	Mod.(3)	7.00	each
(215) Re Conc Abutment	101	Low(2)	60.00	ft
(231) Steel Pier Cap	101	Low(2)	22.50	ft
(234) Re Conc Pier Cap	101	Low(2)	172.00	ft
(300) Strip Seal Exp Joint	101	Sev.(4)	120.00	ft
(311) Moveable Bearing	101	Low(2)	16.00	each
(313) Fixed Bearing	101	Low(2)	12.00	each
(321) Re Conc Approach Slab	101	Sev.(4)	900.00	sq.ft
(331) Re Conc Bridge Railing	101	Sev.(4)	3,301.10	ft
(5000) General Notes	200	Ben.(1)	1.00	each
(5001) Roadway / Channel / Drainage	200	Ben.(1)	3.00	each
(5002) Maintenance Recommenda		en.(1)		each
(5103) Asphalt Overlay w/ Membr	10	v.(4)	39,382.	sq.ft
(5203) Steel Protective Coating (515		Low(2)	96,	sq.ft
(5300) Reinforced Concrete Wing	10	w(2)	60.30	ft

Projects

LCCA

Reverse Calculation

Bridge Analysis

Needs List

Analysis > Work Candidates > Reverse Calculation

Sel.	Action	Base Utility	Utility (Change)	Condition (Change)	LifeCycle (Change)	Mobility (Change)	Risk (Change)	Cost	Benefit / Cost ($k)	Cost ($
	Selected Actions	82.42	92.29 (9.87)	94.16 (24.67)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$12,938,909	.0008	
☐	test remove deck action	83.84	83.84 (0.00)	73.04 (0.00)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$0		
☑	Replace Structure - Network	82.42	92.29 (9.87)	94.16 (24.67)	100.00 (0.00)	80.84 (0.00)	83.33 (0.00)	$12,938,909	.0008	$1,311

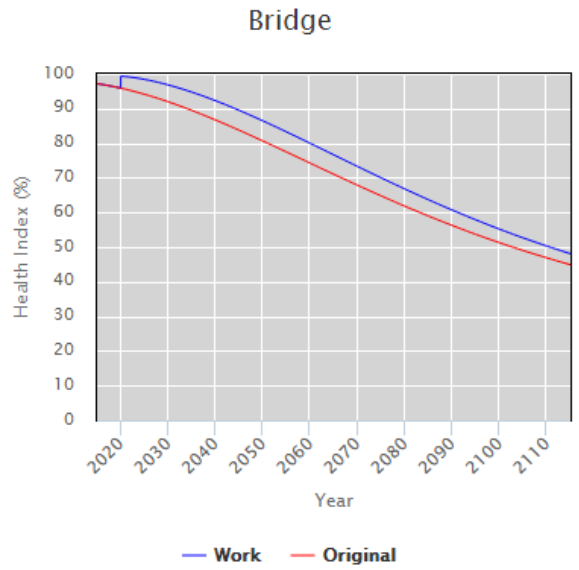
1 Page size: 10

Add to New Project

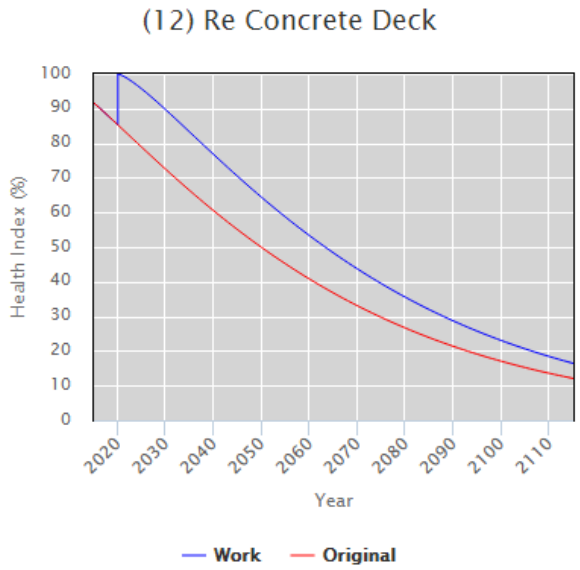
Charts

General Chart

Bridge Health Index



Element Chart



Effects on Each Element

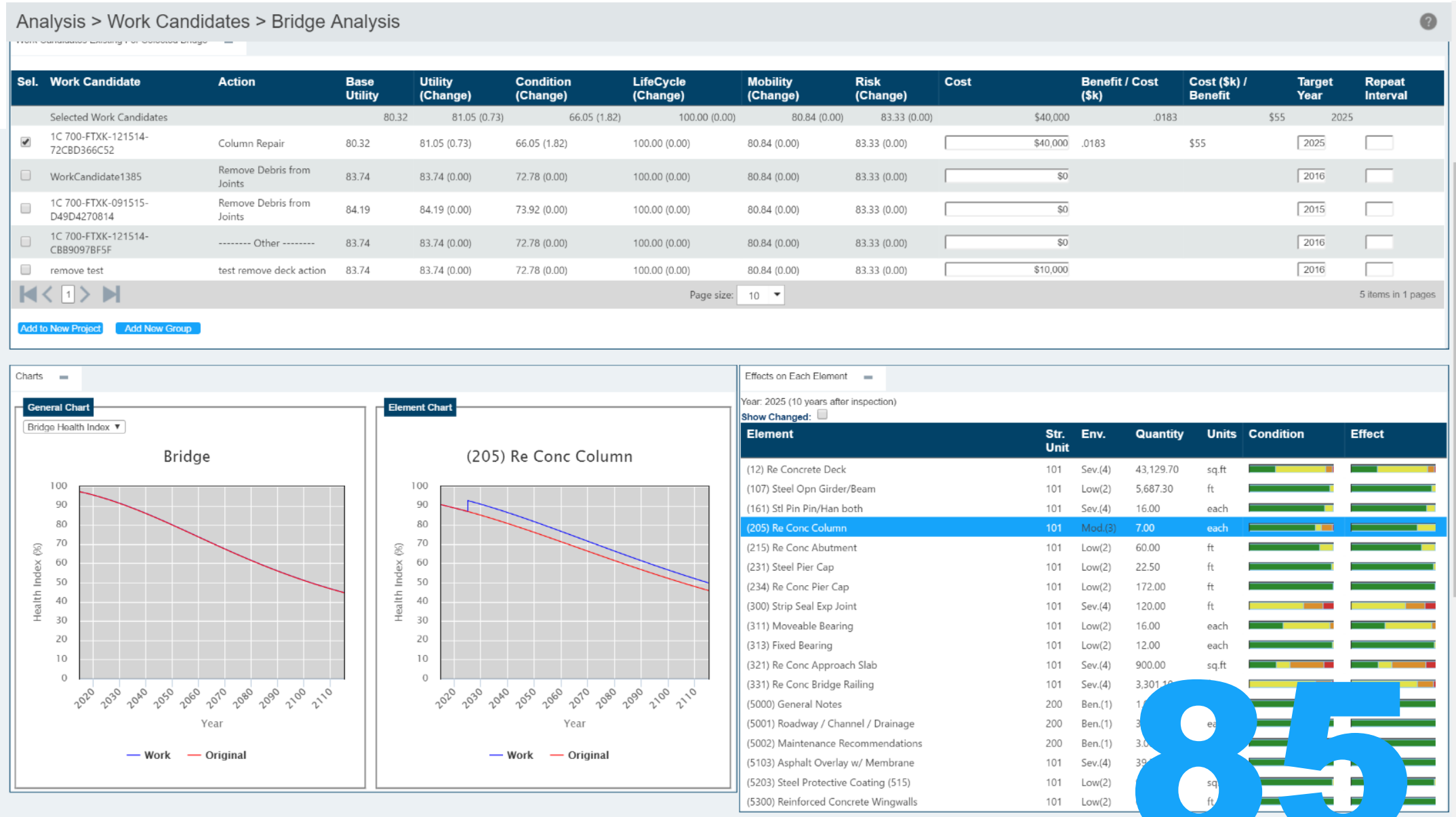
Year: 2020 (5 years after inspection)

Show Changed: ☐

Element	Str. Unit	Env.	Quantity	U
(12) Re Concrete Deck	101	Sev.(4)	43,129.70	s
(107) Steel Opn Girder/Beam	101	Low(2)	5,687.30	f
(161) Stl Pin Pin/Han both	101	Sev.(4)	16.00	e
(205) Re Conc Column	101	Mod.(3)	7.00	e
(215) Re Conc Abutment	101	Low(2)	60.00	f
(231) Steel Pier Cap	101	Low(2)	22.50	f
(234) Re Conc Pier Cap	101	Low(2)	172.00	f
(300) Strip Seal Exp Joint	101	Sev.(4)	120.00	f
(311) Moveable Bearing	101	Low(2)	16.00	e
(313) Fixed Bearing	101	Low(2)	12.00	e
(321) Re Conc Approach Slab	101	Sev.(4)	900.00	s
(331) Re Conc Bridge Railing	101	Sev.(4)	3,301.10	f
(5000) General Notes	200	Ben.(1)	1.00	e
(5001) Roadway / Channel / Drainage	200	Ben.(1)	3.00	e
(5002) Maintenance Recommendations	200	Ben.(1)		e
(5103) Asphalt Overlay w/ Membrane	101	Sev.(4)	2.10	s
(5203) Steel Protective Coating (515)	101	L	3.10	s
(5300) Reinforced Concrete Wingwalls	101	(2)		f

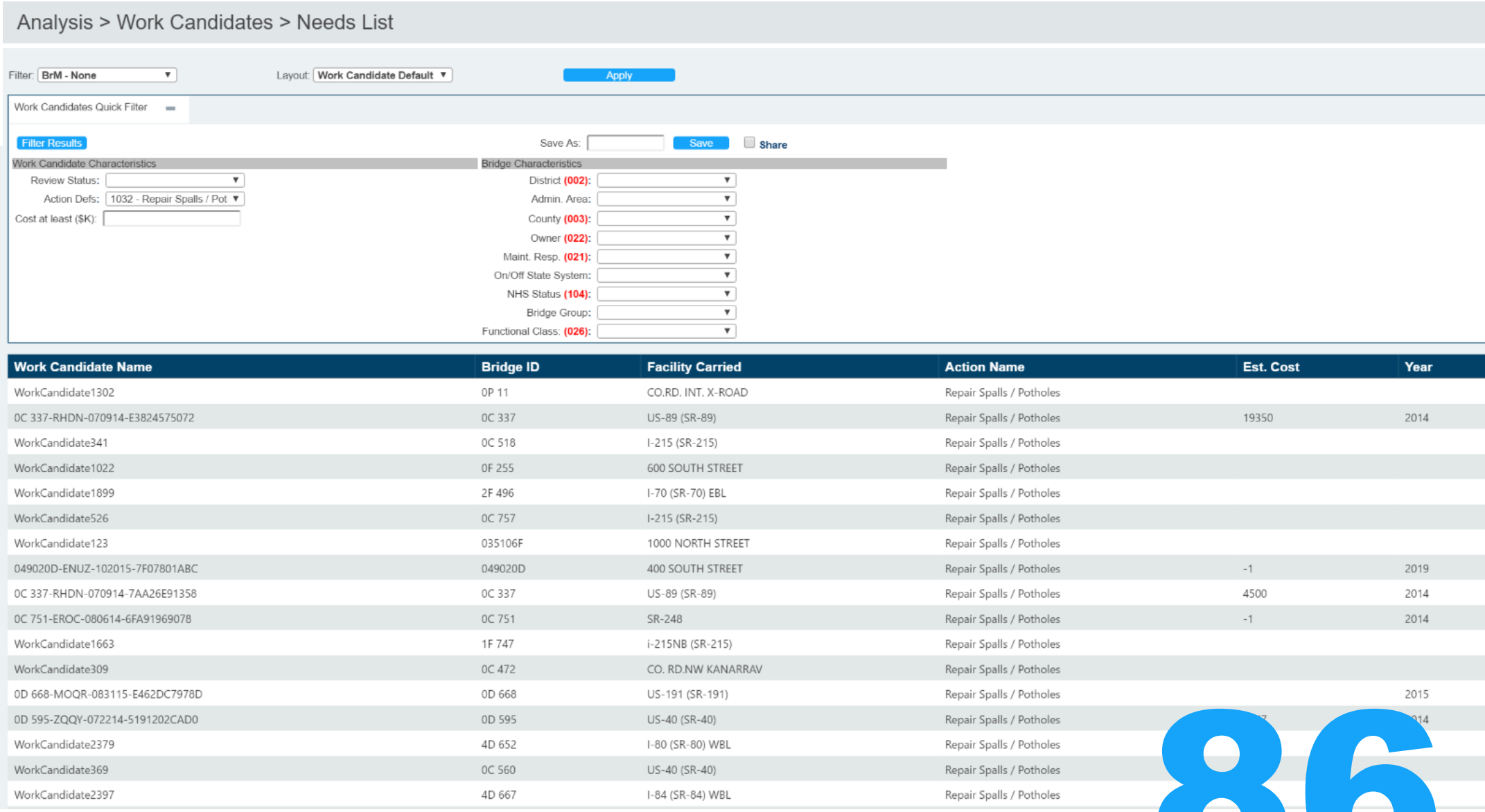
Projects

LCCA
Reverse Calculation
Bridge Analysis
Needs List



Projects

LCCA
Reverse Calculation
Bridge Analysis
Needs List



Work Candidate Name	Bridge ID	Facility Carried	Action Name	Est. Cost	Year
WorkCandidate1302	0P 11	CO.RD. INT. X-ROAD	Repair Spalls / Potholes		
0C 337-RHDN-070914-E3824575072	0C 337	US-89 (SR-89)	Repair Spalls / Potholes	19350	2014
WorkCandidate341	0C 518	I-215 (SR-215)	Repair Spalls / Potholes		
WorkCandidate1022	0F 255	600 SOUTH STREET	Repair Spalls / Potholes		
WorkCandidate1899	2F 496	I-70 (SR-70) EBL	Repair Spalls / Potholes		
WorkCandidate526	0C 757	I-215 (SR-215)	Repair Spalls / Potholes		
WorkCandidate123	035106F	1000 NORTH STREET	Repair Spalls / Potholes		
049020D-ENUZ-102015-7F07801ABC	049020D	400 SOUTH STREET	Repair Spalls / Potholes	-1	2019
0C 337-RHDN-070914-7AA26E91358	0C 337	US-89 (SR-89)	Repair Spalls / Potholes	4500	2014
0C 751-EROC-080614-6FA91969078	0C 751	SR-248	Repair Spalls / Potholes	-1	2014
WorkCandidate1663	1F 747	i-215NB (SR-215)	Repair Spalls / Potholes		
WorkCandidate309	0C 472	CO. RD.NW KANARRAV	Repair Spalls / Potholes		
0D 668-MOQR-083115-E462DC7978D	0D 668	US-191 (SR-191)	Repair Spalls / Potholes		2015
0D 595-ZQQY-072214-5191202CAD0	0D 595	US-40 (SR-40)	Repair Spalls / Potholes		
WorkCandidate2379	4D 652	I-80 (SR-80) WBL	Repair Spalls / Potholes		
WorkCandidate369	0C 560	US-40 (SR-40)	Repair Spalls / Potholes		
WorkCandidate2397	4D 667	I-84 (SR-84) WBL	Repair Spalls / Potholes		

Projects

Projects > Create / Edit Project > Query

Bridges

Project Category: No Category | Filter: BrM - None | Bridge Group:

Bridge View | Bridge Map View

Bridge ID	District	County	Facility Carried	Feature Intersected	Owner	On/Off System	Hwy System	Funct Class	Admin Area	Bridge Grp	Deck	Super	Sub
1C 700													
1C 700	Region 2	Salt Lake	RP.I215NB TO I80WB	I-215,I-80 & 4 INT.RAMPS	State Highway Agency	On System	1 Interstate Hwy	11 Urban Interstate	2430	R2: I80 215 Interchange	6 Satisfactory	7 Good	6 Satisfacto

Bridge Needs

Layout: Project Bridge Needs Default | Display Category Actions Only | Display Work Candidates Only | Display Zero Cost Recommendations | Displa

	Bridge ID	Action	Work Candidate	Unit Label	Kind Hwy	B District	Base Utililty	Utililty	Utility Change	Estimated Cost	Benefit/Cost($k)	Cost($k)/E
☑	1C 700	Column Repair	1C 700-FTXK-121514-72CBD366C52	2	1 Interstate Hwy	Region 2	72.39	81.27	8.88	$40,000	0.222	$5
☐	1C 700	Replace Structure - Network	Generated 09/12/2016	2	1 Interstate Hwy	Region 2	76.92	92.39	15.47	$12,938,909	0.0012	$836
☐	1C 700	test remove deck action	remove test	2	1 Interstate Hwy	Region 2	76.92	83.84	6.92	$10,000	0.692	$1

Add to Project

Selected Bridges and Work

Bridge ID	District	County	Facility Carried	Feature Intersected	Deck	Superstructure	Substructure	Culvert
1C 700	02	035	RP.I215NB TO I80WB	I-215,I-80 & 4 INT.RAMPS	6 Satisfactory	7 Good	6 Satisfactory	N N/A (NBI

Action	Work Item	Base Utility	Utility	Utility Change	Estimated Cost	Benefit/Cost($k)	Cost($k)/Be
Column Repair	1C 700-FTXK-121514-72CBD366C52	72.39	81.27	8.88	$40,000	0.22	

Projects

Programs > Assign Projects

Assign Projects

Projects List

Filter: BrM - None ▼ Program: All ▼

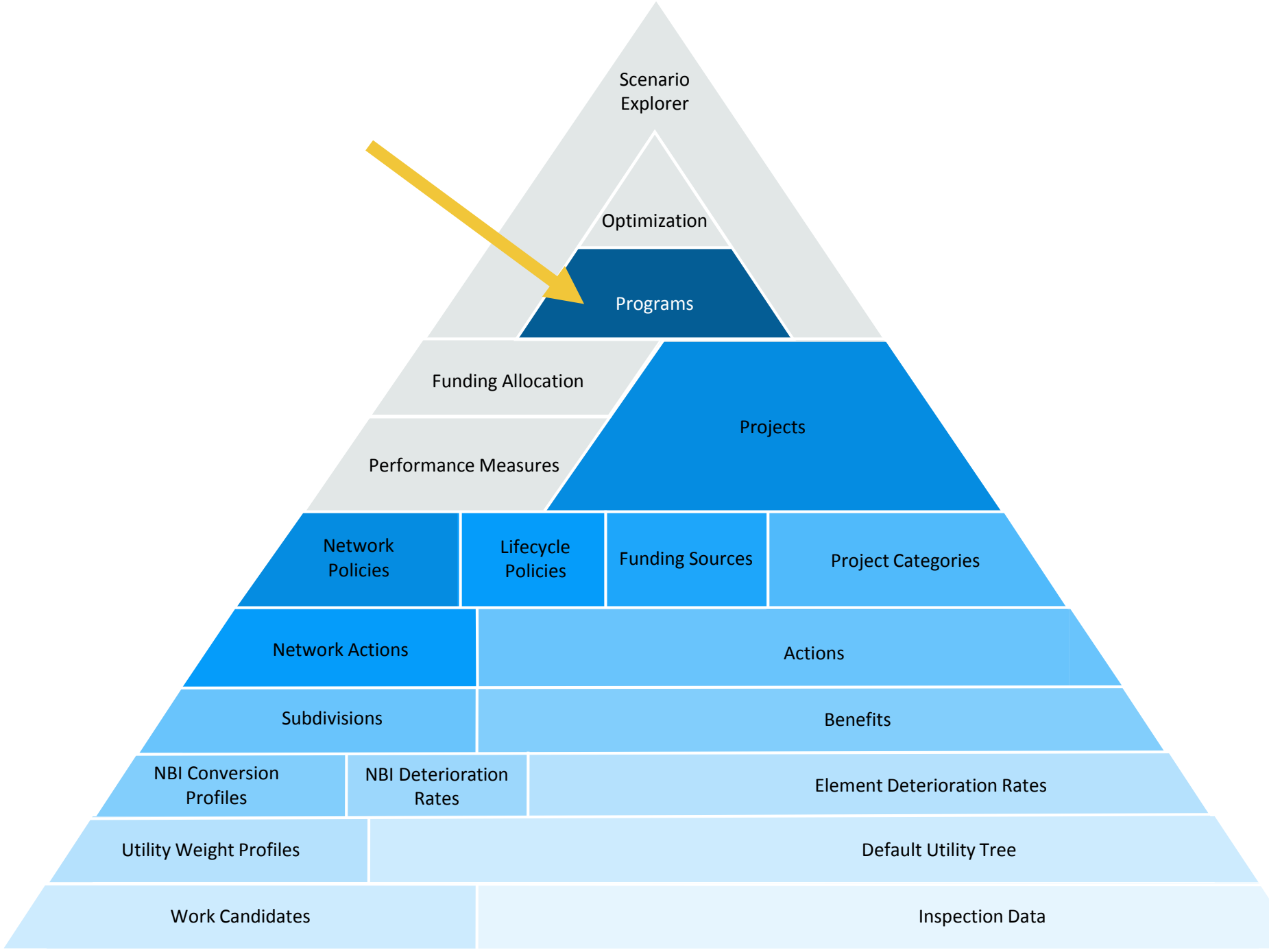
	Alt ID	Name	Start Date	Add Cost	Create Date	Status	First Name	Project Category
☑	94100	Test Project	8/1/2016 12:00:00 AM	0	8/29/2016 11:54:29 AM	Planned	Pontis	No Category

Items per page: 15 ▼

Total Projects: 1 Selected Projects: 1 Projects Matching Search: 1

Choose an Action

Assign Selected Projects ▼ to program(s): Replacement, Preservation, Test and Freeze ▼ to selected program(s) Program and Year ▼ 2018 ▼


Scenario Explorer
Optimization
Programs
Funding Allocation
Performance Measures
Projects
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
Element Deterioration Rates
Utility Weight Profiles
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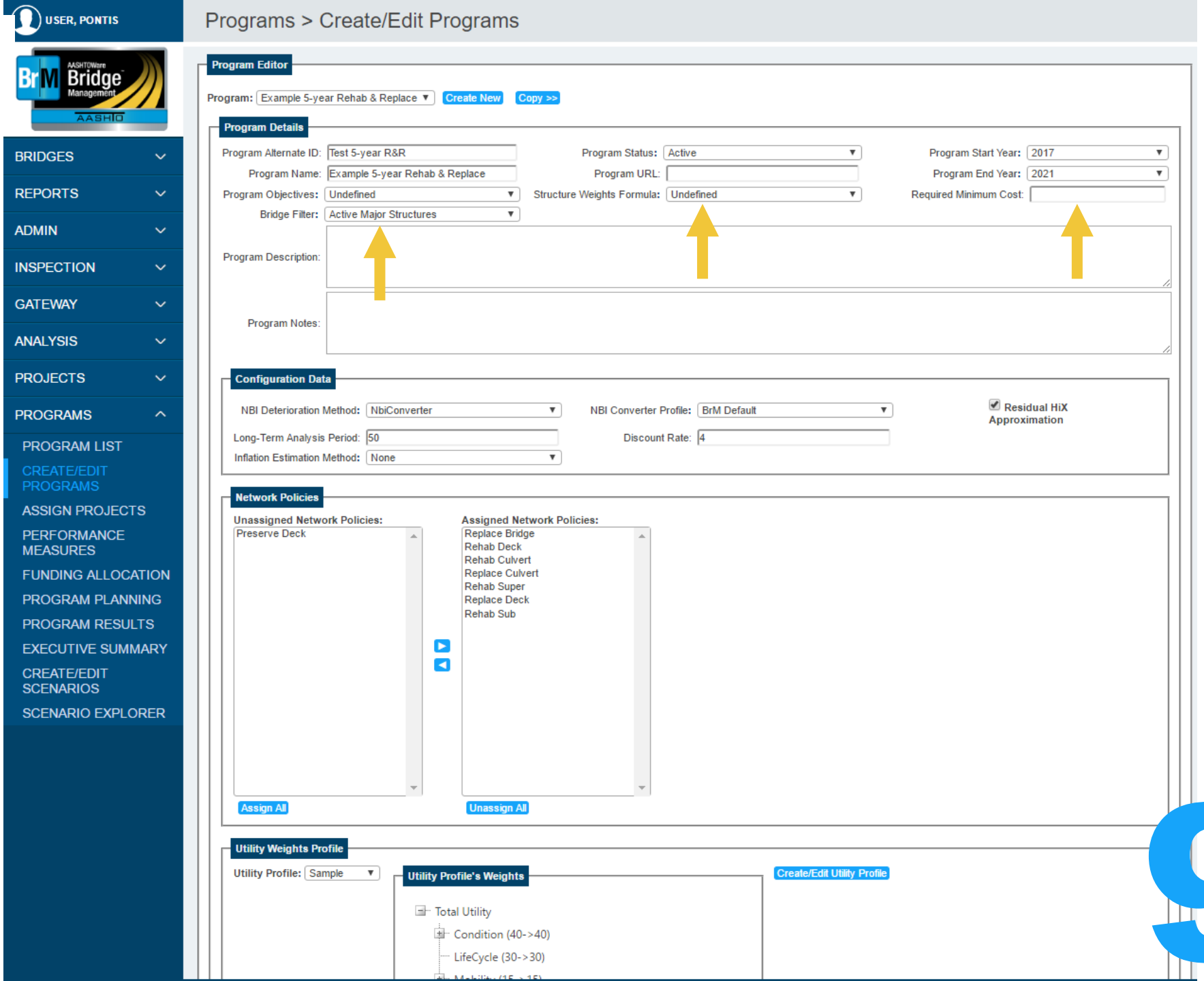
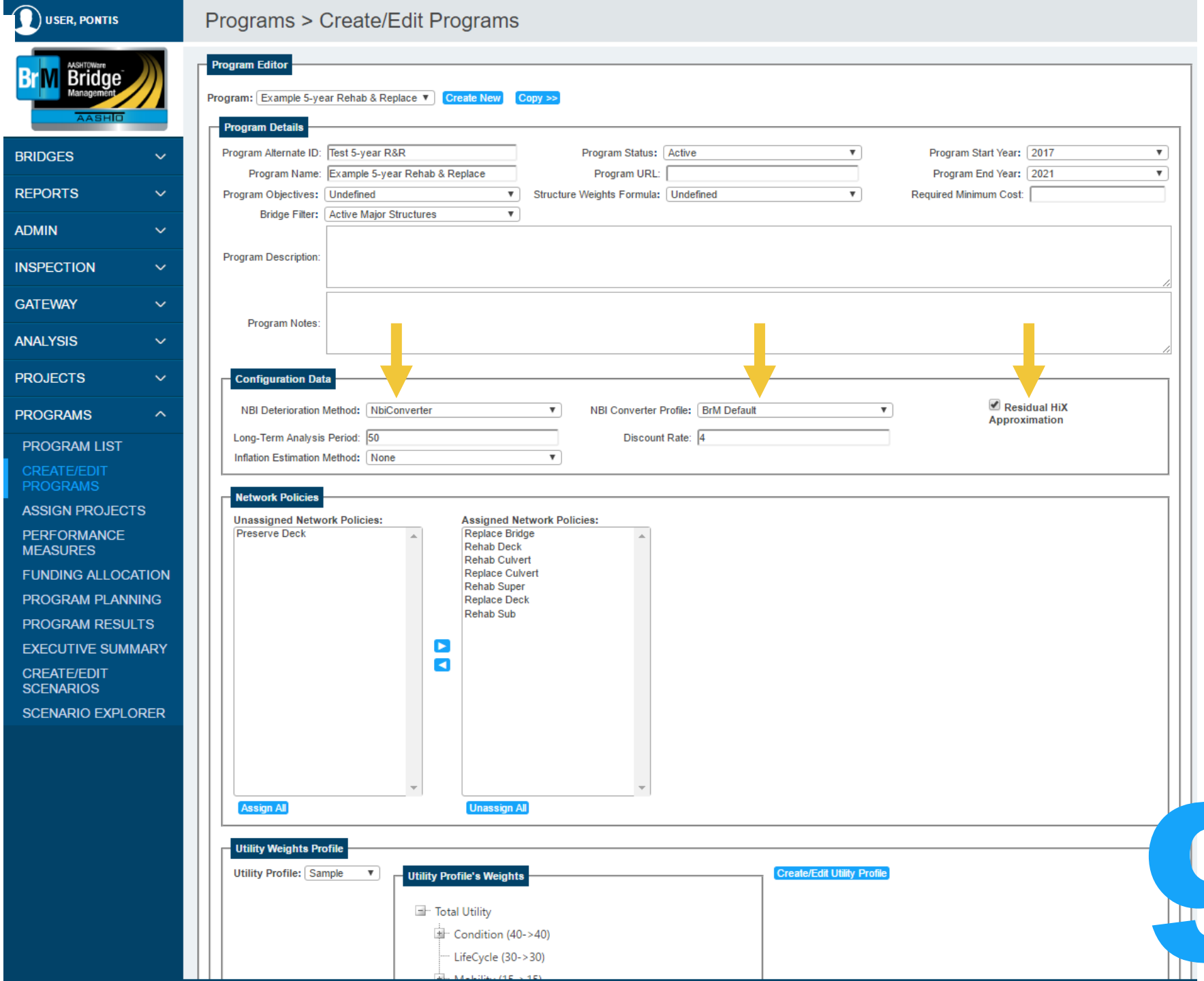
Inspection Data

Programs


USER, PONTIS
Programs > Create/Edit Programs
BrM AASHTOWare Bridge Management AASHTO
BRIDGES
REPORTS
ADMIN
INSPECTION
GATEWAY
ANALYSIS
PROJECTS
PROGRAMS
PROGRAM LIST
CREATE/EDIT PROGRAMS
ASSIGN PROJECTS
PERFORMANCE MEASURES
FUNDING ALLOCATION
PROGRAM PLANNING
PROGRAM RESULTS
EXECUTIVE SUMMARY
CREATE/EDIT SCENARIOS
SCENARIO EXPLORER
Program Editor
Program: Example 5-year Rehab & Replace
Create New
Copy >>
Program Details
Program Alternate ID: Test 5-year R&R
Program Name: Example 5-year Rehab & Replace
Program Objectives: Undefined
Bridge Filter: Active Major Structures
Program Status: Active
Program URL:
Structure Weights Formula: Undefined
Program Start Year: 2017
Program End Year: 2021
Required Minimum Cost:
Program Description:
Program Notes:
Configuration Data
NBI Deterioration Method: NbiConverter
Long-Term Analysis Period: 50
Inflation Estimation Method: None
NBI Converter Profile: BrM Default
Discount Rate: 4
Residual HiX Approximation
Network Policies
Unassigned Network Policies:
Preserve Deck
Assigned Network Policies:
Replace Bridge
Rehab Deck
Rehab Culvert
Replace Culvert
Rehab Super
Replace Deck
Rehab Sub
Assign All
Unassign All
Utility Weights Profile
Utility Profile: Sample
Utility Profile's Weights
Total Utility
Condition (40->40)
LifeCycle (30->30)
Create/Edit Utility Profile

Programs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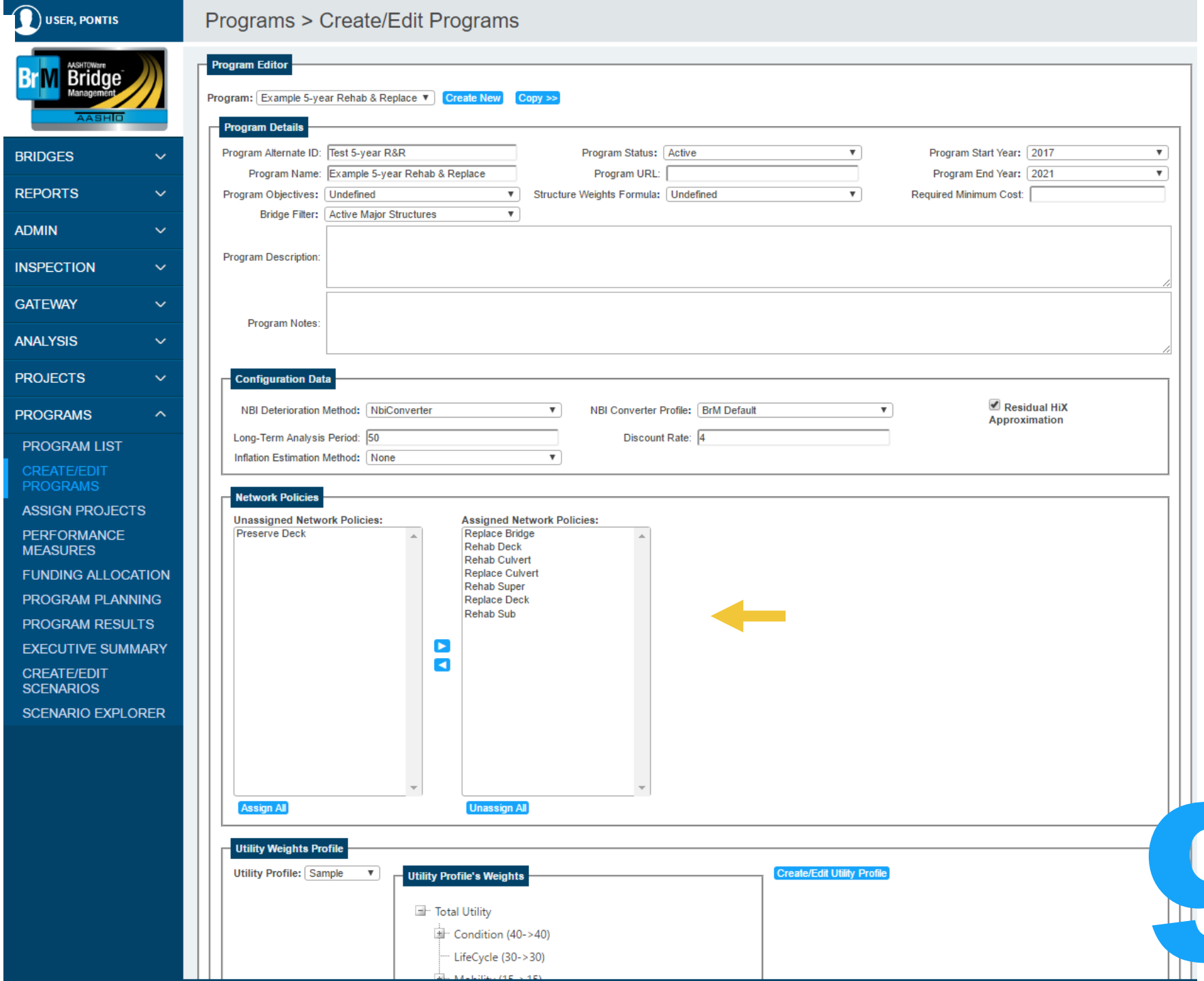
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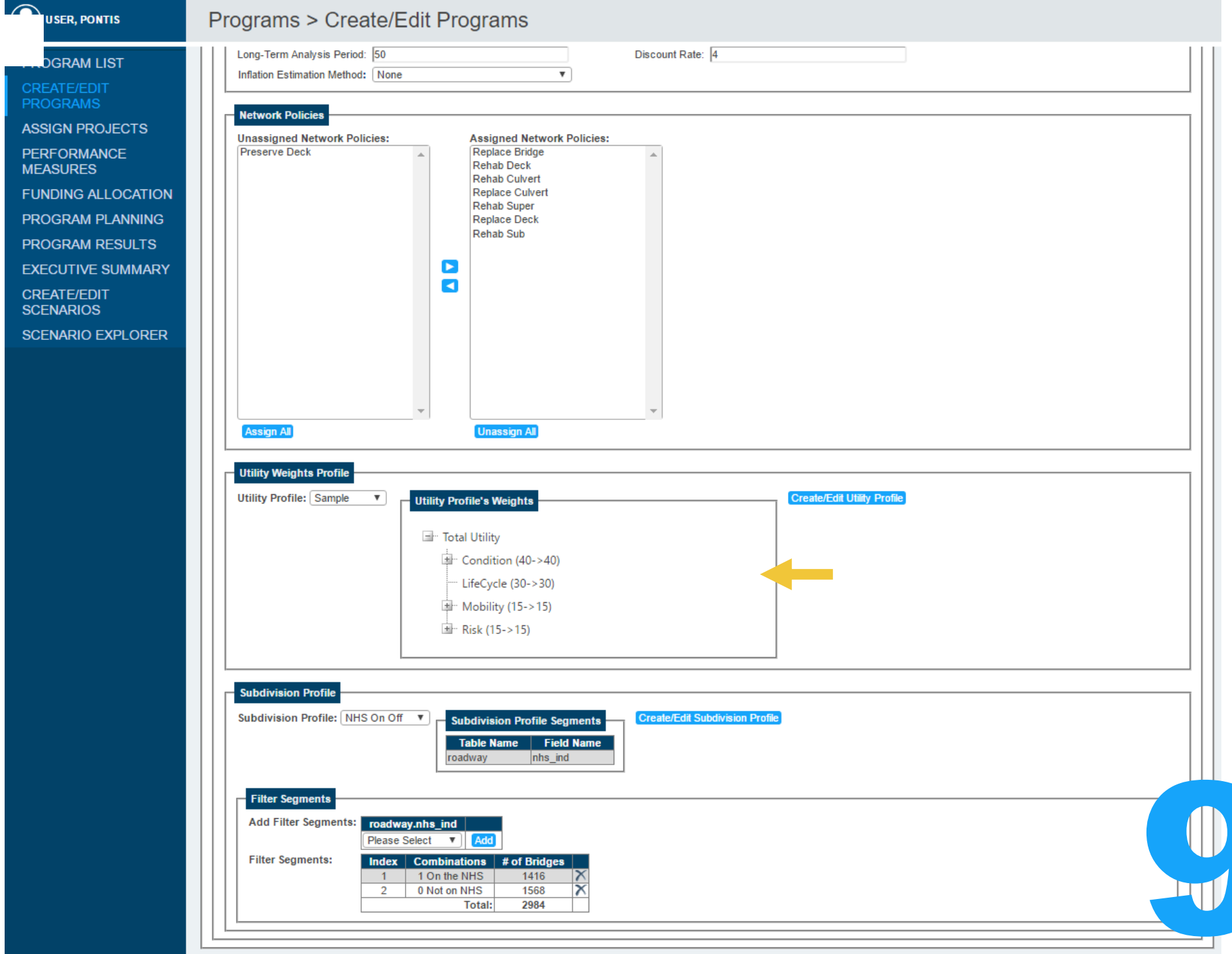
Programs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Utility Profile: Sample
Utility Profile's Weights
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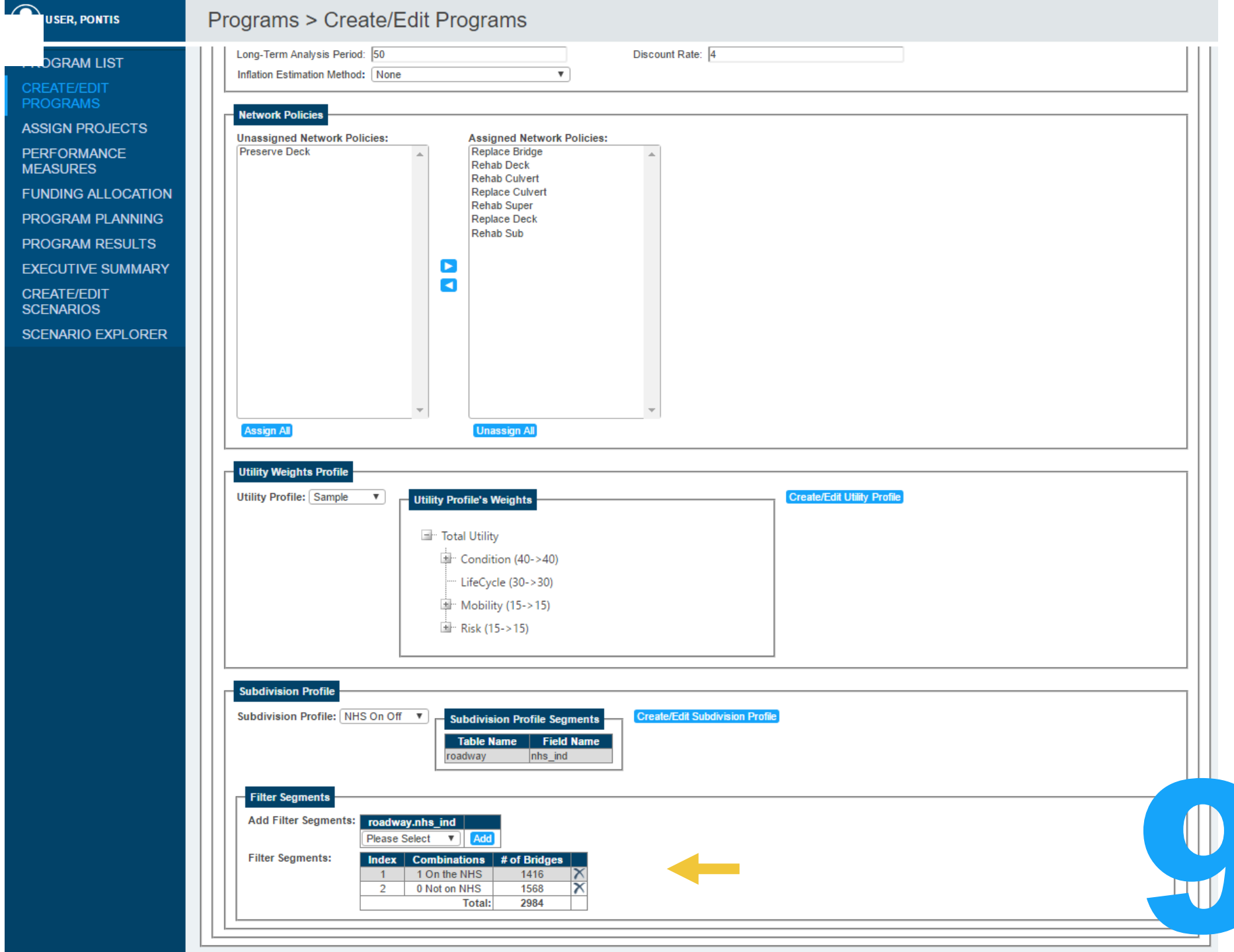
Total Utility
Condition (40->40)
LifeCycle (30->30)
Mobility (15->15)
Risk (15->15)
Subdivision Profile
Subdivision Profile: NHS On Off
Subdivision Profile Segments
Table Name
Field Name
roadway
nhs_ind
Create/Edit Subdivision Profile
Filter Segments
Add Filter Segments:
roadway.nhs_ind
Please Select
Add
Filter Segments:
Index
Combinations
# of Bridges
1
1 On the NHS
1416
2
0 Not on NHS
1568
Total:
2984

Programs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Subdivision Profile
Subdivision Profile: NHS On Off
Subdivision Profile Segments
Table Name
Field Name
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nhs_ind
Create/Edit Subdivision Profile
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Add Filter Segments:
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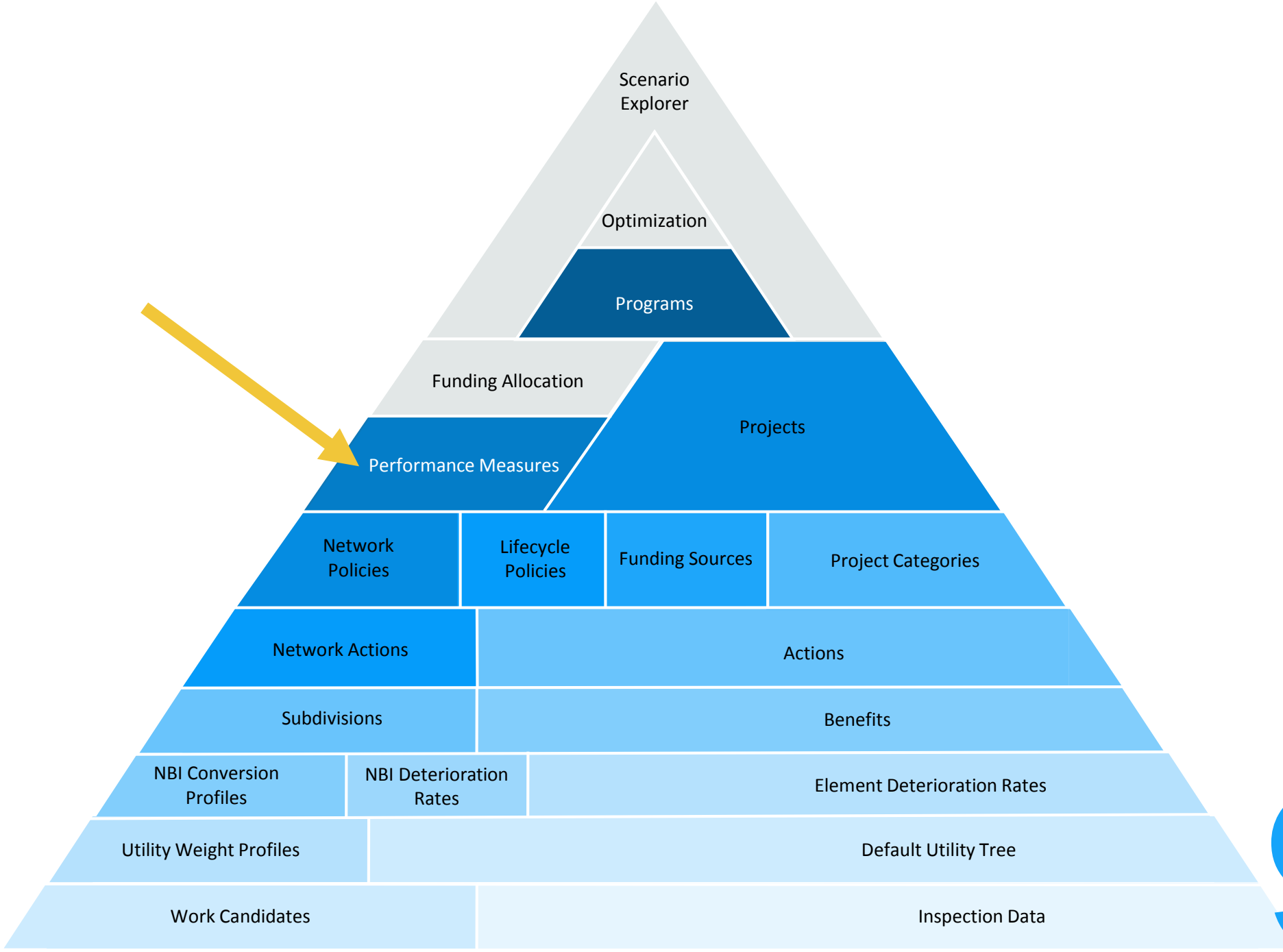
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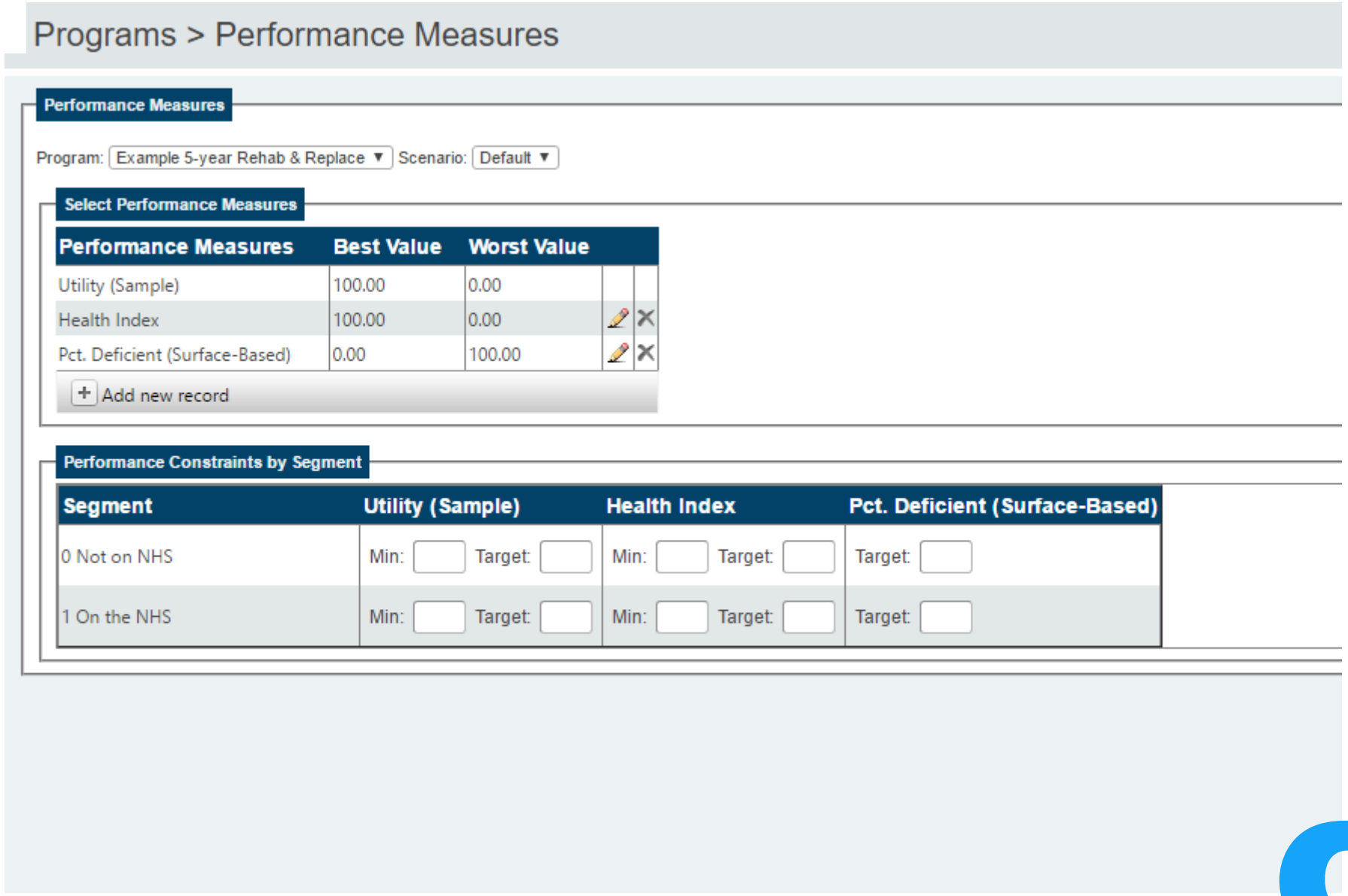

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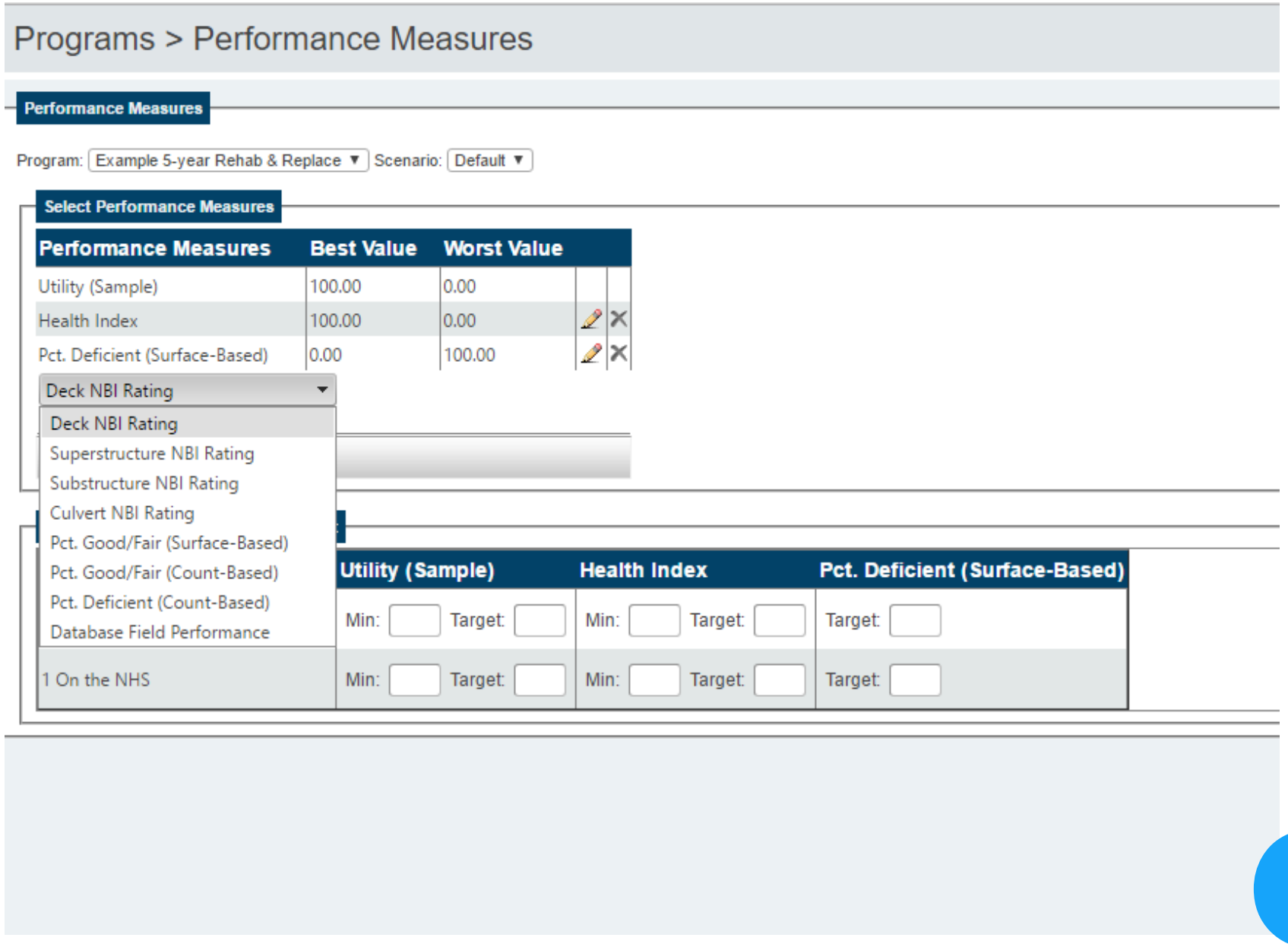

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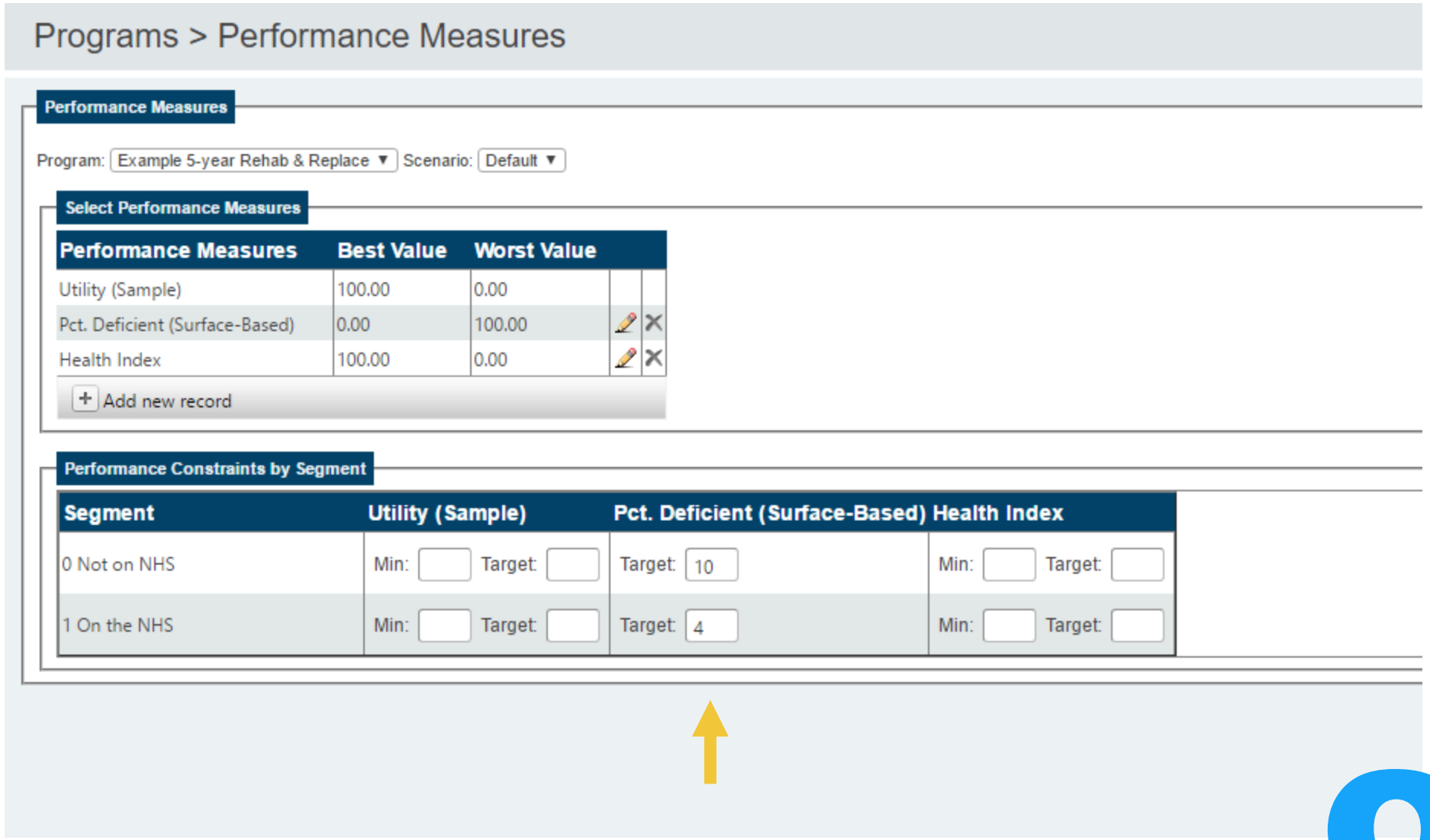

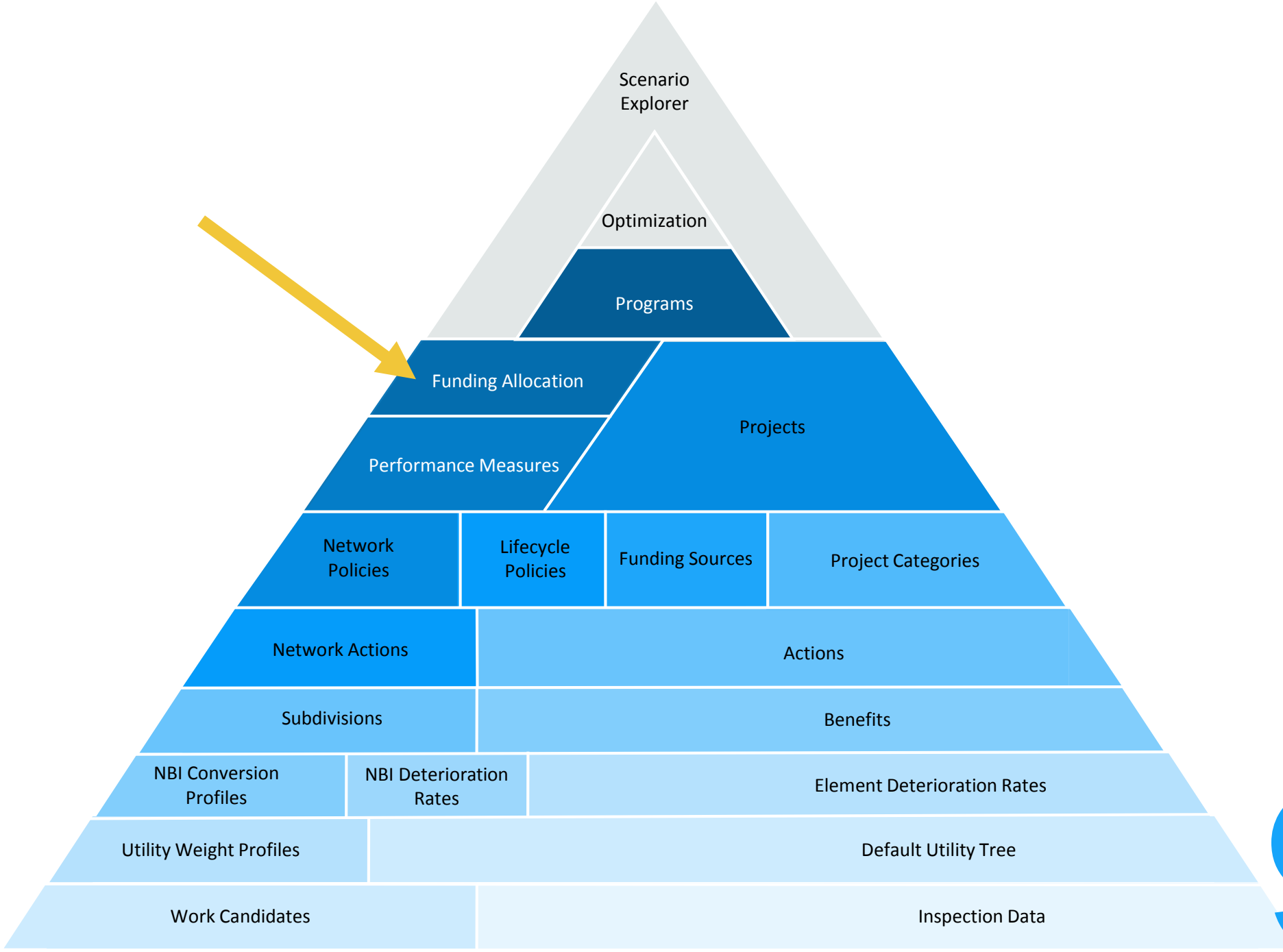
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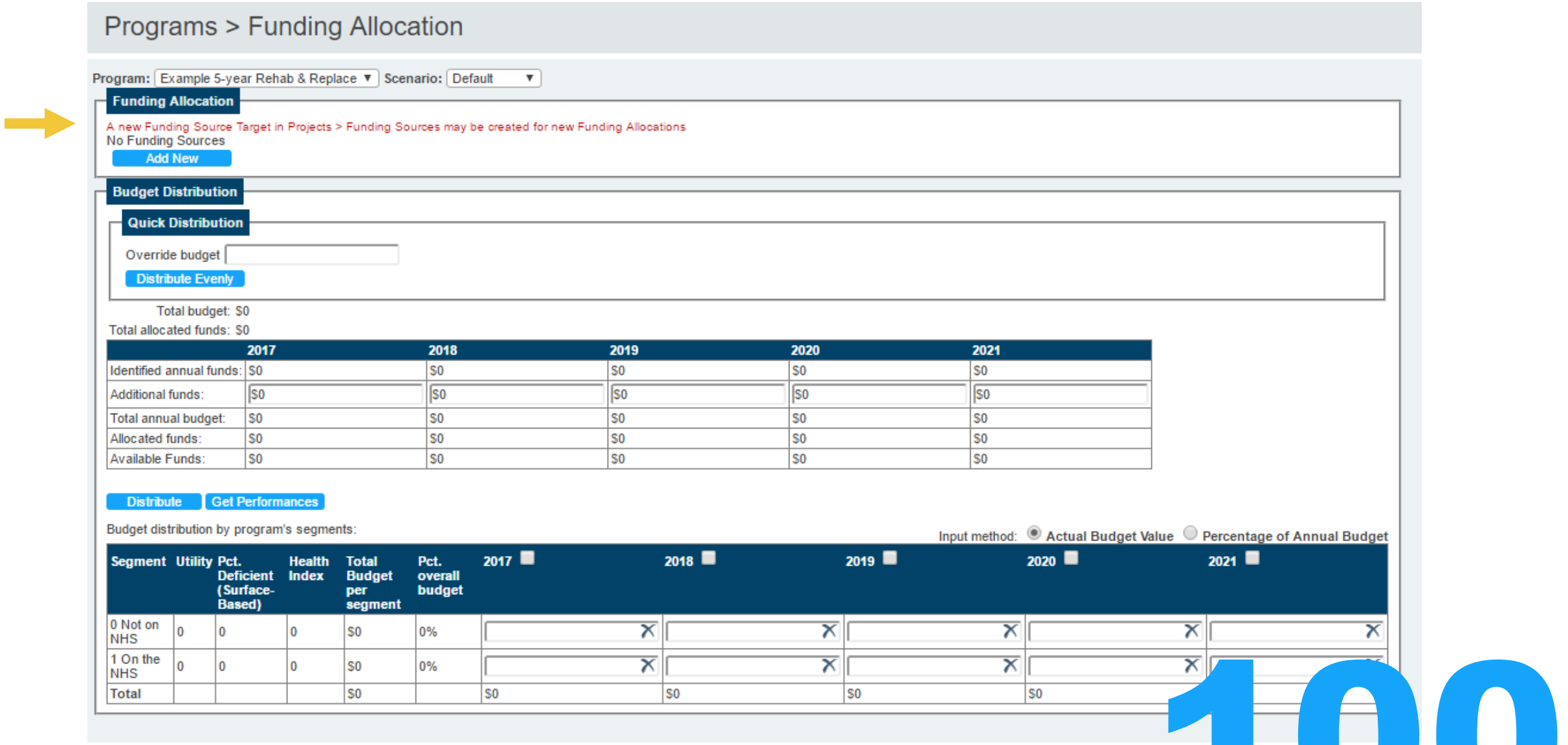
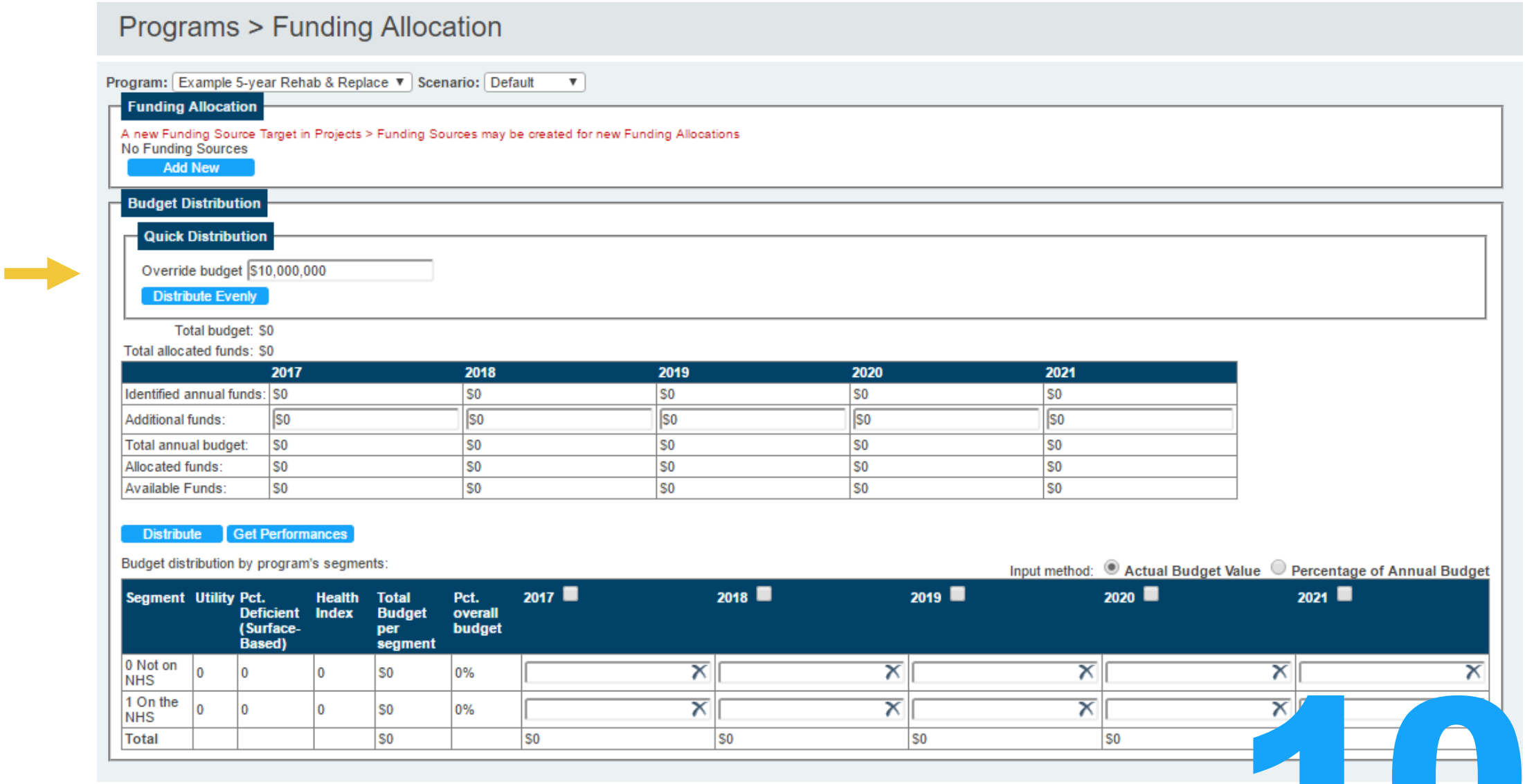
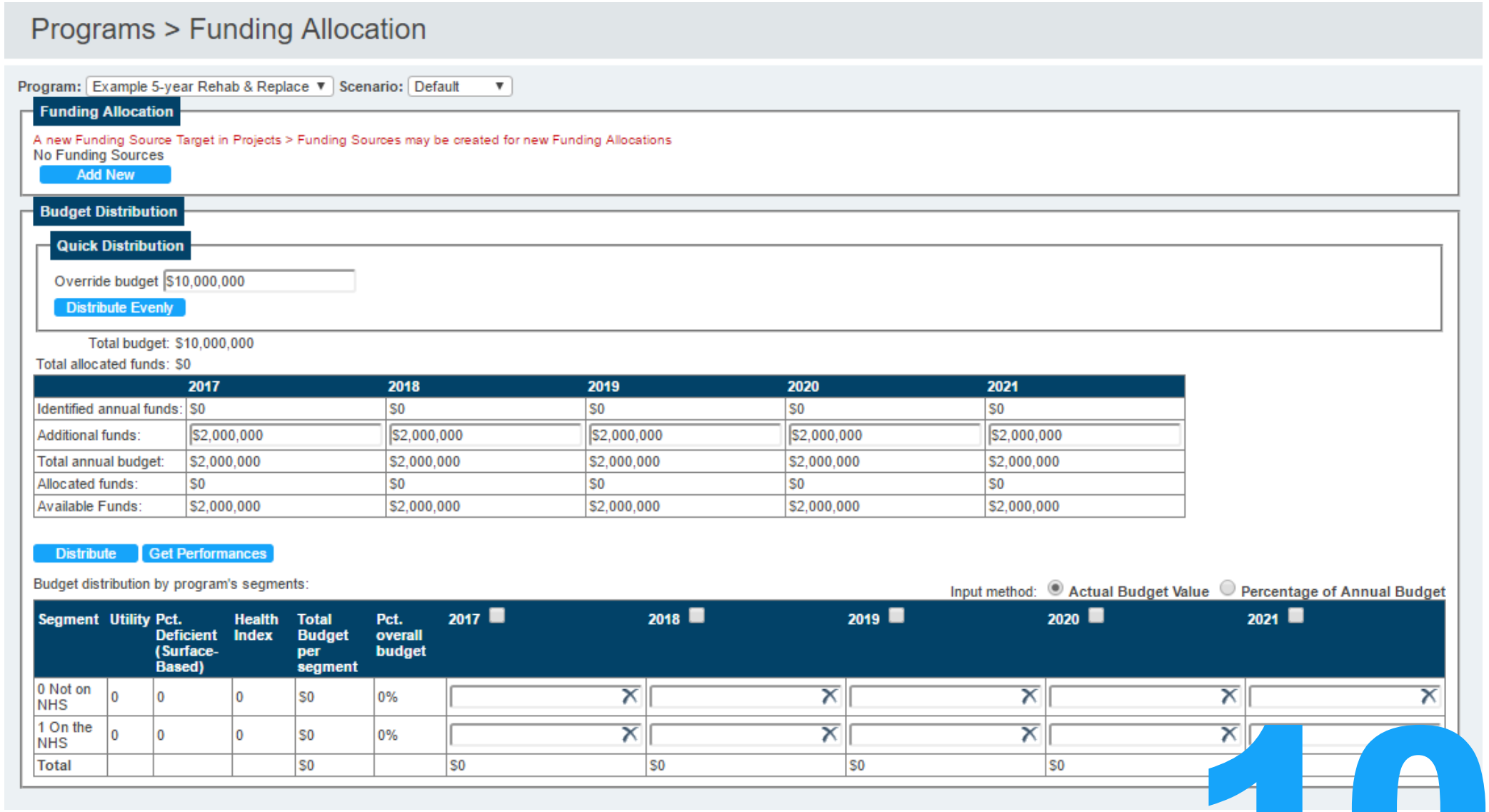


Funding Allocation



101

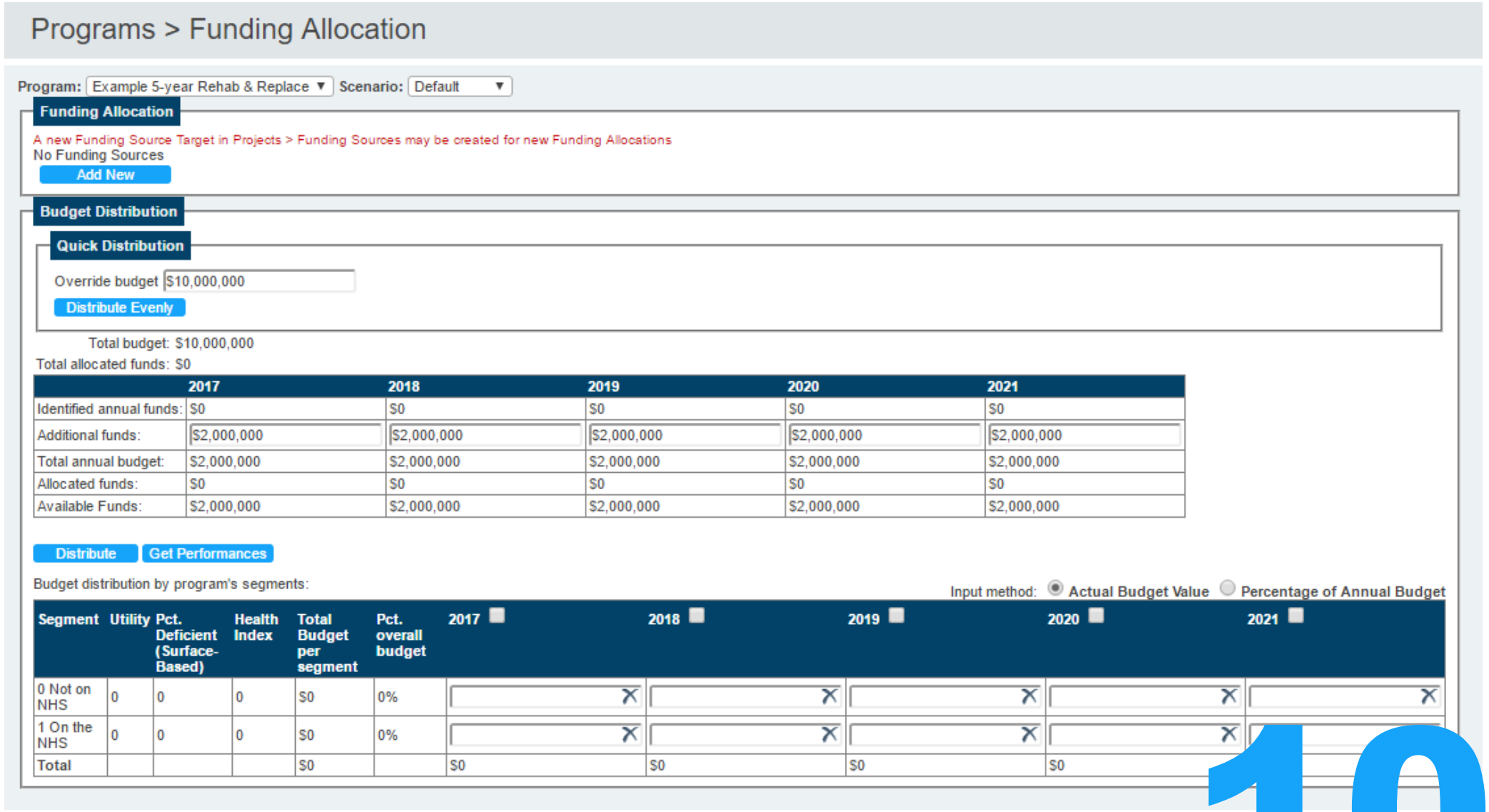
Funding Allocation



	2017	2018	2019	2020	2021
Identified annual funds:	$0	$0	$0	$0	$0
Additional funds:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Total annual budget:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Allocated funds:	$0	$0	$0	$0	$0
Available Funds:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000

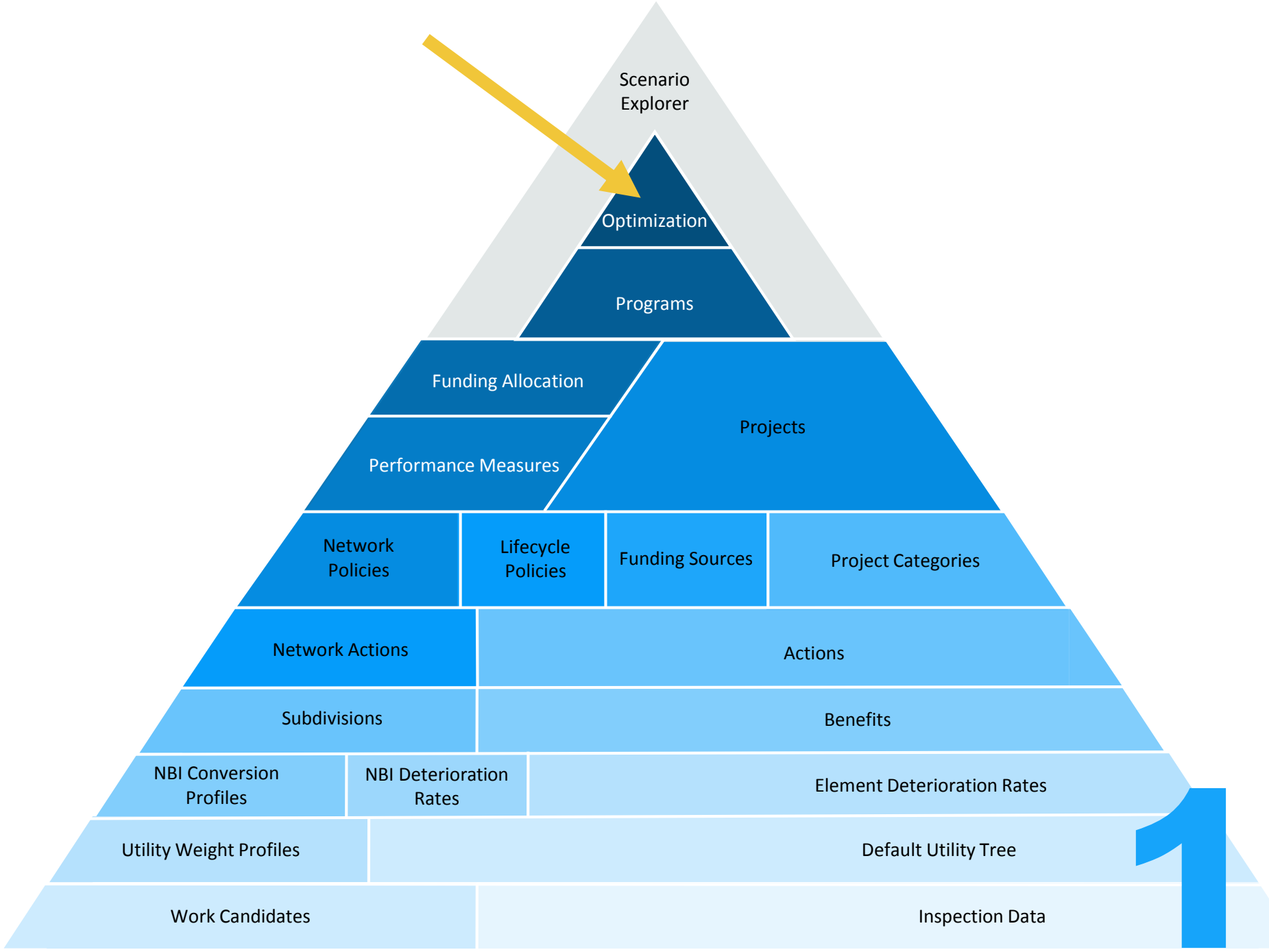
Segment	Utility	Pct. Deficient (Surface-Based)	Health Index	Total Budget per segment	Pct. overall budget	2017	2018	2019	2020	2021
0 Not on NHS	0	0	0	$0	0%					
1 On the NHS	0	0	0	$0	0%					
Total				$0		$0	$0	$0	$0	

Funding Allocation



	2017	2018	2019	2020	2021
Identified annual funds:	$0	$0	$0	$0	$0
Additional funds:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Total annual budget:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Allocated funds:	$0	$0	$0	$0	$0
Available Funds:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000

Segment	Utility	Pct. Deficient (Surface-Based)	Health Index	Total Budget per segment	Pct. overall budget	2017	2018	2019	2020	2021
0 Not on NHS	0	0	0	$0	0%					
1 On the NHS	0	0	0	$0	0%					
Total				$0		$0	$0	$0	$0	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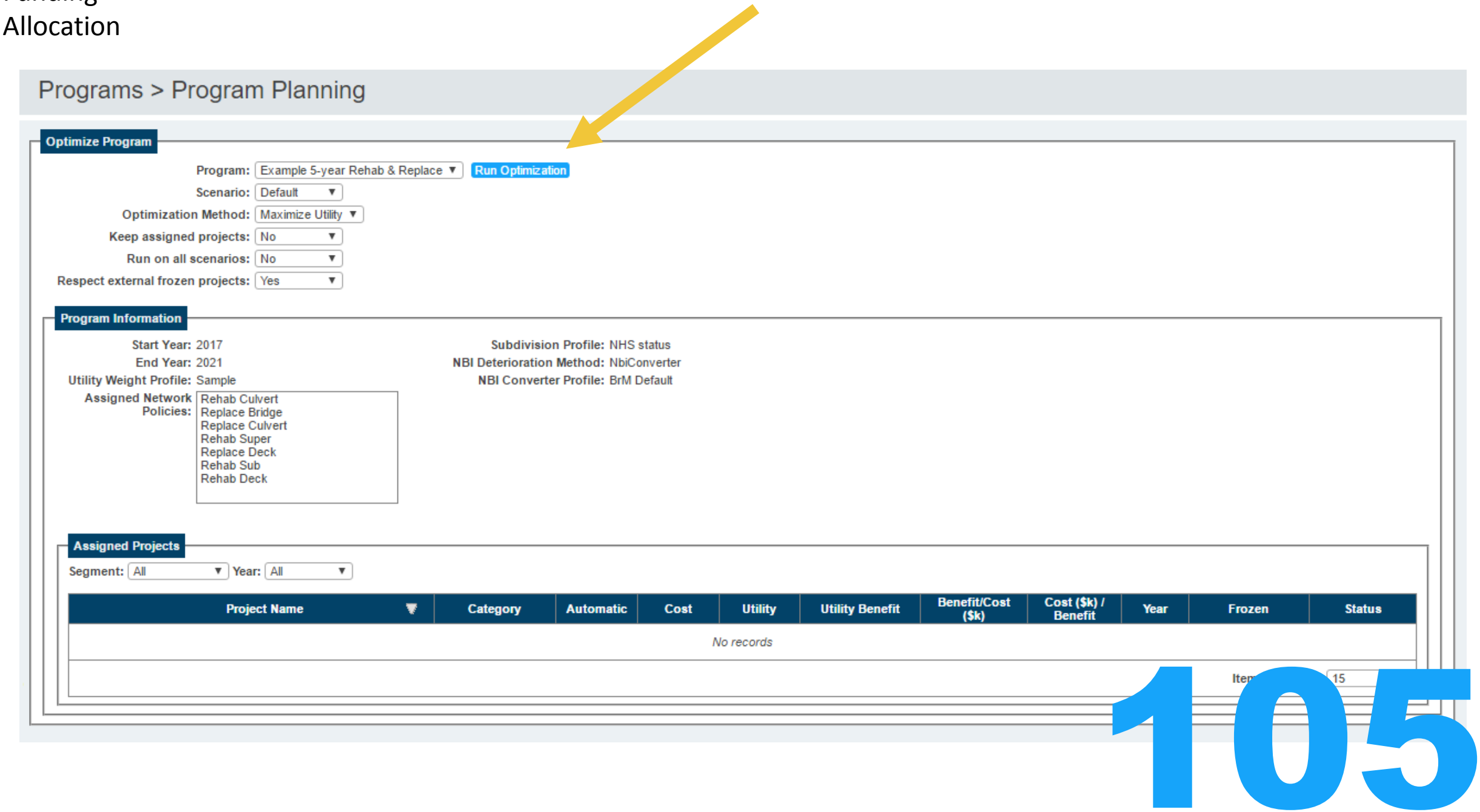
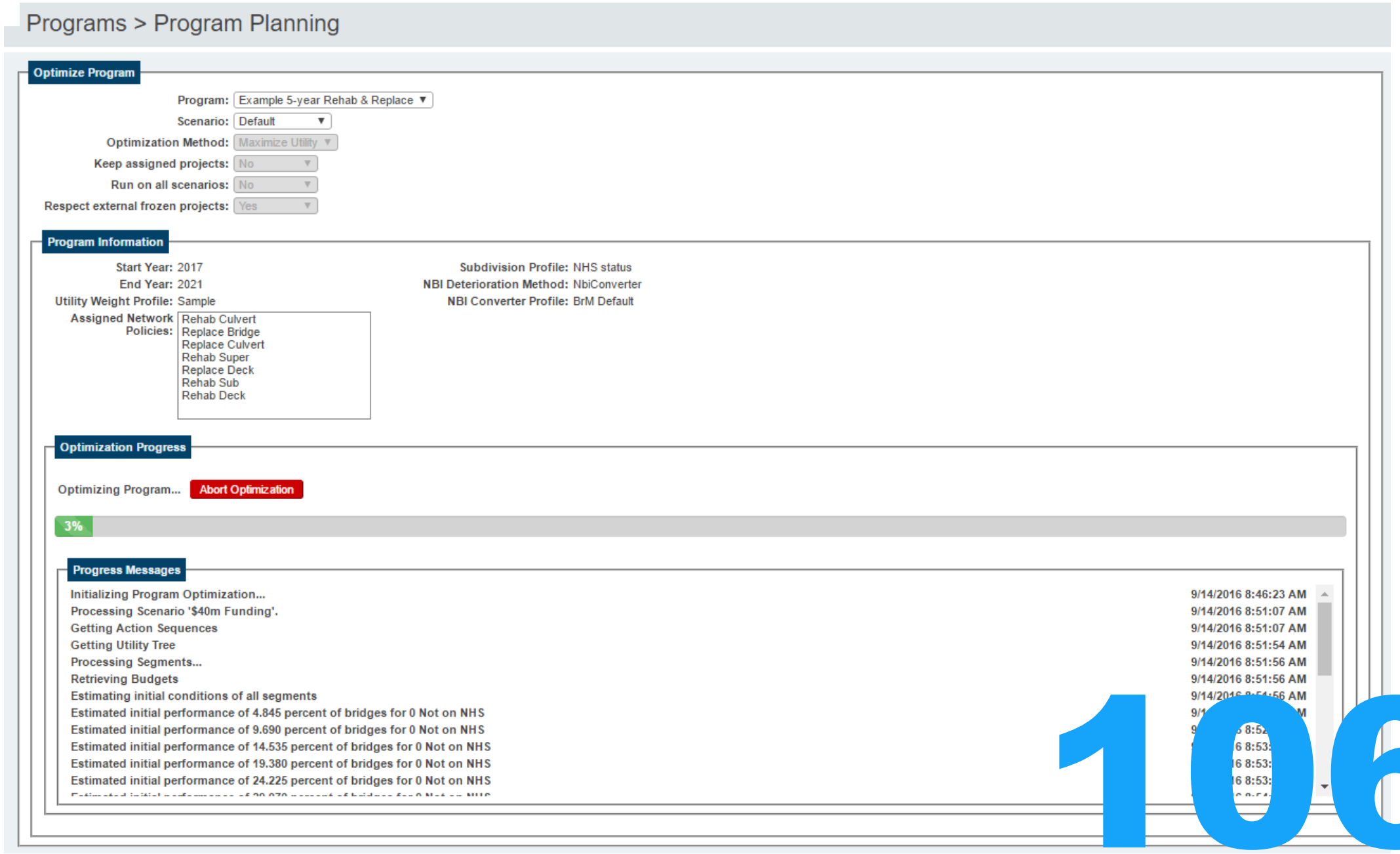


Funding Allocation



Funding
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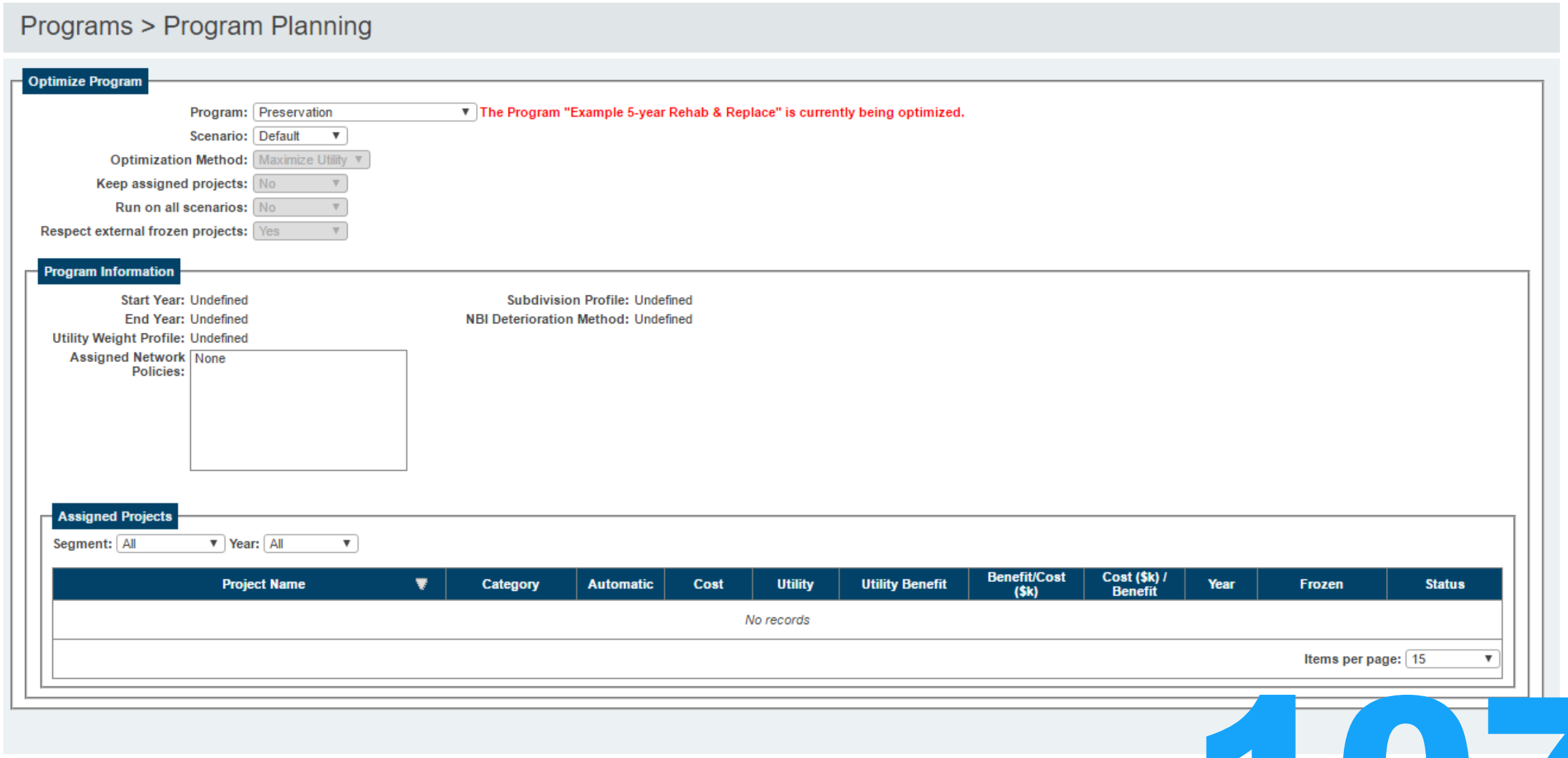


Funding Allocation

Keep assigned projects: No
Run on all scenarios: No
Respect external frozen projects: Yes

Program Information

Start Year: 2017
End Year: 2021
Utility Weight Profile: Sample
Assigned Network Policies: Rehab Culvert, Replace Bridge, Replace Culvert, Rehab Super, Replace Deck, Rehab Sub, Rehab Deck

Subdivision Profile: NHS status
NBI Deterioration Method: NbiConverter
NBI Converter Profile: BrM Default

Optimization Progress

Complete!

Progress Messages

Get Project Alternatives	9/14/2016 11:31:04 AM
Getting work candidates	9/14/2016 11:31:04 AM
Processing Segment 2	9/14/2016 11:31:05 AM
Persisting Segment 2's Results	9/14/2016 11:38:34 AM
Year: 2017 Project Count: 170	9/14/2016 11:39:17 AM
Year: 2018 Project Count: 53	9/14/2016 11:39:42 AM
Year: 2019 Project Count: 22	9/14/2016 11:40:01 AM
Year: 2020 Project Count: 15	9/14/2016 11:40:18 AM
Year: 2021 Project Count: 9	9/14/2016 11:40:36 AM
Processing Segments Completed	9/14/2016 11:40:40 AM
Finalizing Data	9/14/2016 11:40:40 AM
Program Optimization Complete	9/14/2016 11:40:40 AM

Assigned Projects

Segment: All Year: All

Project Name	Category	Automatic	Cost	Utility	Utility Benefit	Benefit/Cost ($k)	Cost ($k) / Benefit	Year	Frozen	Status
031000(Replace Deck)	No Category	Yes	$70,000	88.05	10.46	0.1494	$6.69	2017	No	Proposed
021206(Rehab Culvert)	No Category	Yes	$29	91.14	0.03	1.0509	$0.95	2021	No	Proposed
020956(Rehab Culvert)	No Category	Yes	$168	90.51	0.02	0.1194	$8.38	2021	No	Proposed
020955(Rehab Culvert)	No Category	Yes	$187	89.81	0.03	0.1601	$6.25	2021	No	Proposed
020786(Rehab Deck)	No Category	Yes	$1,452	88.88	0.71	0.489	$2.05	2017	No	Proposed
020783(Rehab Culvert)	No Category	Yes	$2,734	82.12	0.14	0.0512	$19.53	2020	No	Proposed
020774(Replace Deck, Replace Super)	No Category	Yes	$75,566	57.34	17.03	0.2254	$4.44	2017	No	Proposed
020774(Rehab Sub)	No Category	Yes	$343,981	70.7	16.49	0.0479	$20.86	2021	No	Proposed
020762(Replace Deck, Replace Super)	No Category	Yes	$396,800	84.53	24.72	0.0623	$16.05	2020	No	Proposed
020762(Rehab Deck)	No Category	Yes	$62	65.53	0.03	0.4841	$2.07	2017	No	Proposed
020738(Rehab Culvert)	No Category	Yes	$121	89.46	0.25	2.0619	$0.49	2021	No	Proposed
020726(Replace Deck, Replace Super)	No Category	Yes	$148,436	77.83	19.06	0.1284	$7.79	2018	No	Proposed
020714(Replace Deck)	No Category	Yes	$42,400	85.03	5.72	0.1349	$7.41	2018	No	Proposed
020712(Rehab Culvert)	No Category	Yes	$5,380	85.36	0.29	0.0539	$18.55	2020	No	Proposed
020702(Replace Deck, Replace Super)	No Category	Yes	$128,800	71.83	31.49	0.2445	$4.09	2017	No	Proposed

First | Previous | 1 | 2 | 3 | Next | Last

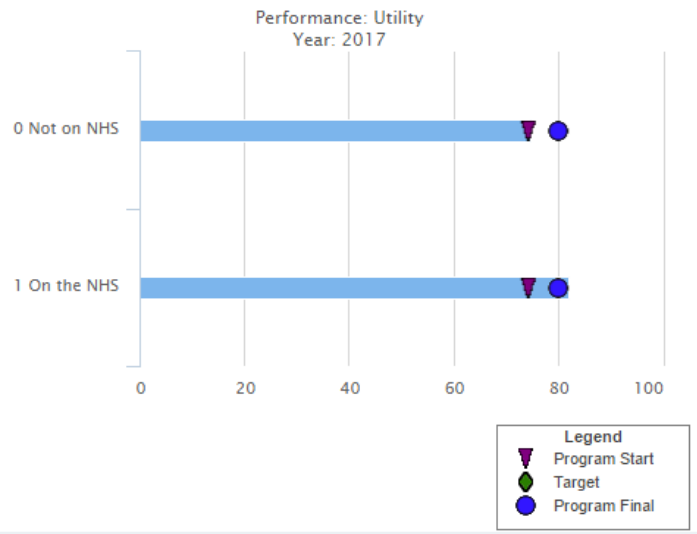
Items per

Funding Allocation

Programs > Program Results

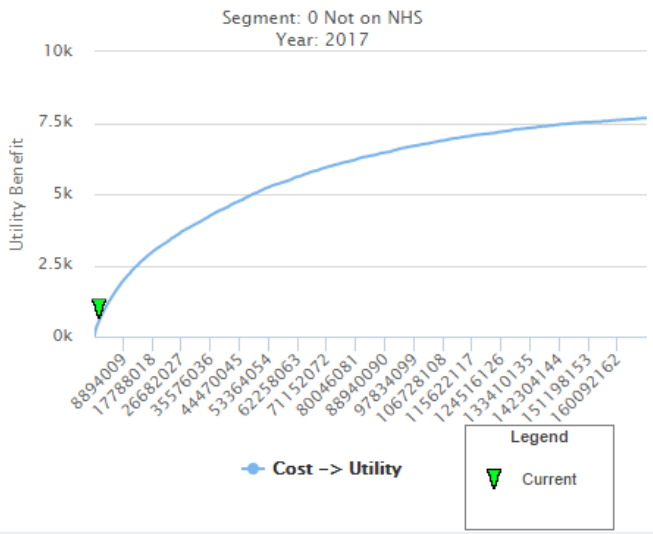
Edit Parameters

Future Performance by Segment



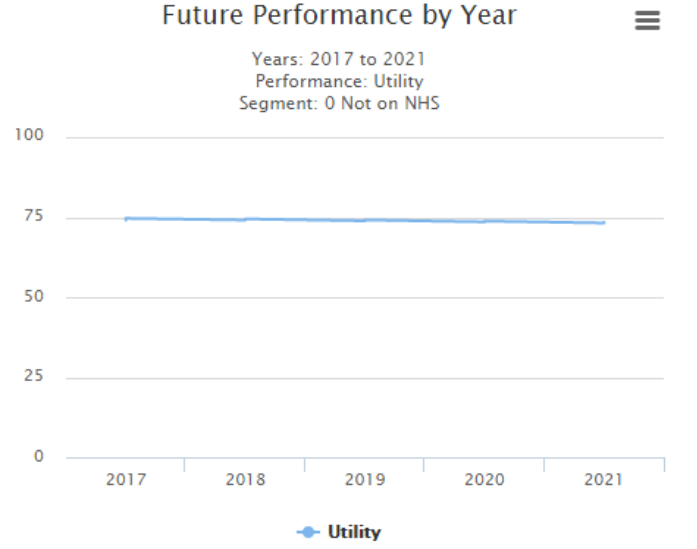
Edit Parameters

Benefit Cost Frontier



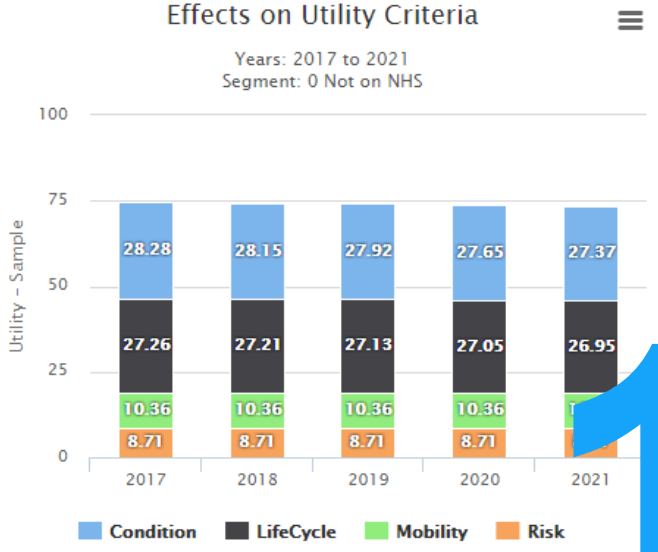
Edit Parameters

Future Performance by Year



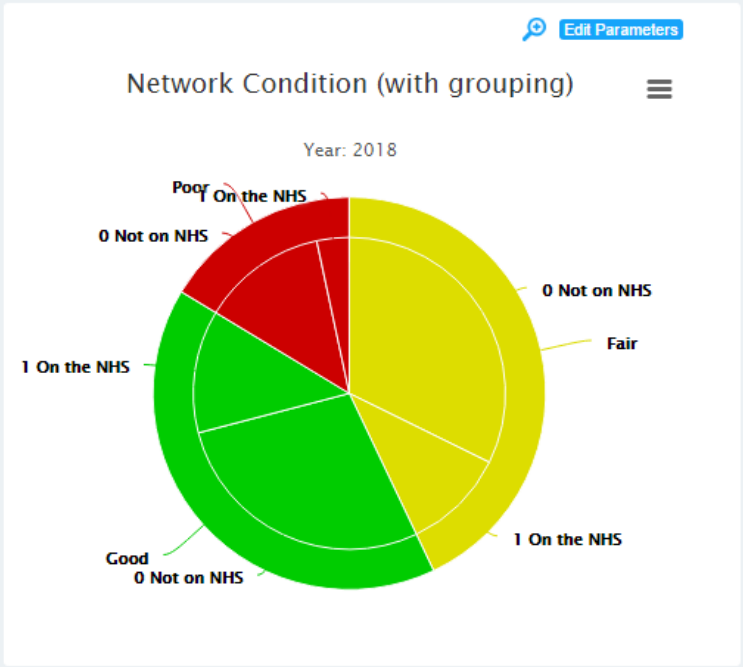
Edit Parameters

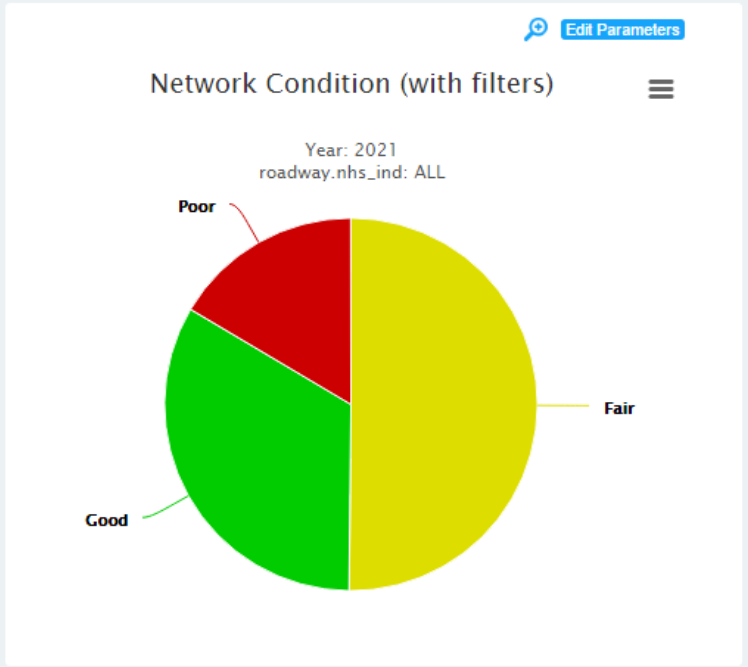
Effects on Utility Criteria

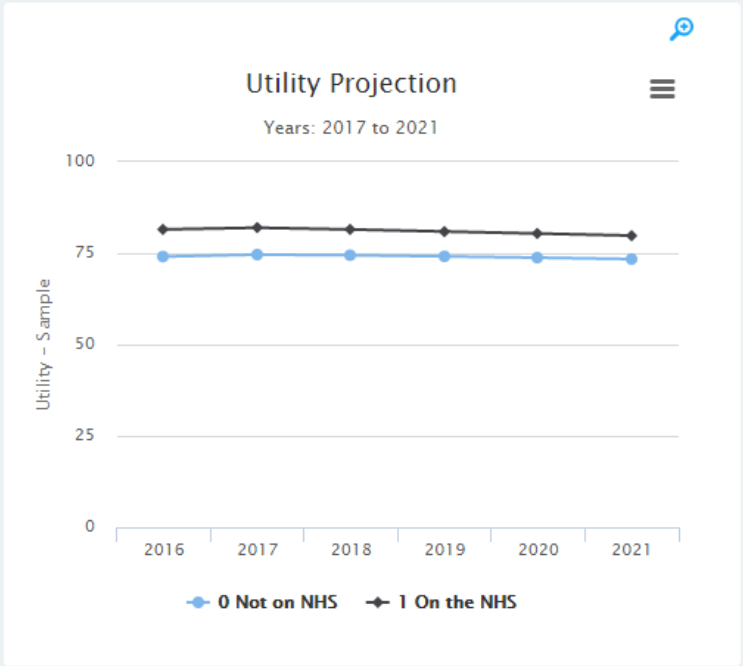


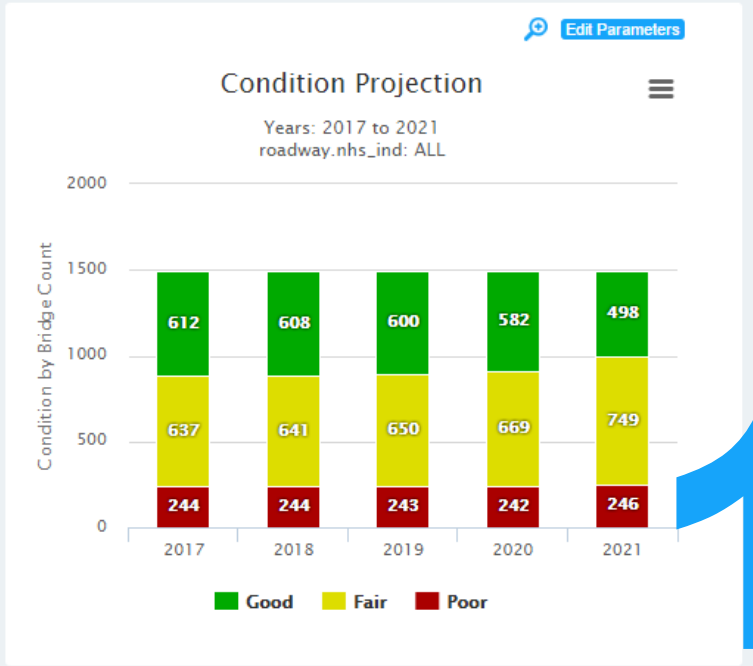
Funding Allocation

Programs > Executive Summary

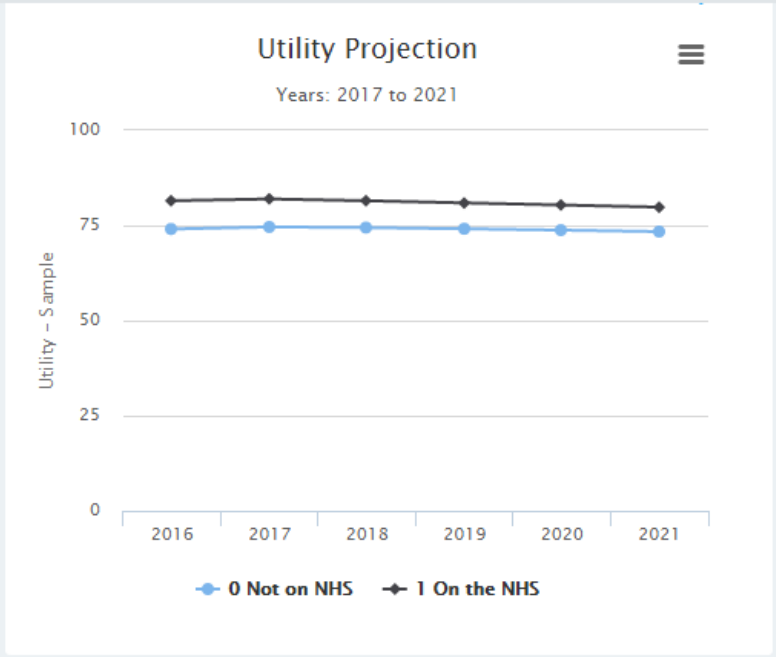


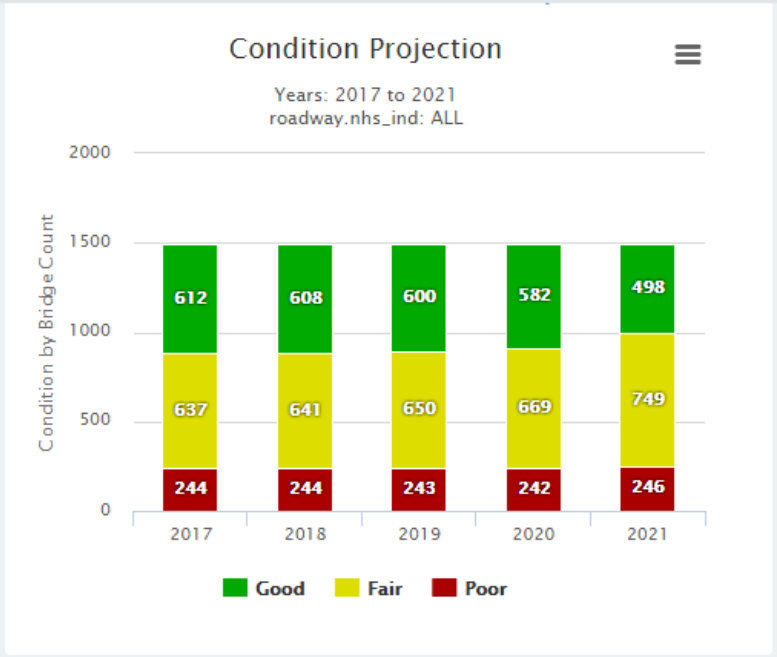


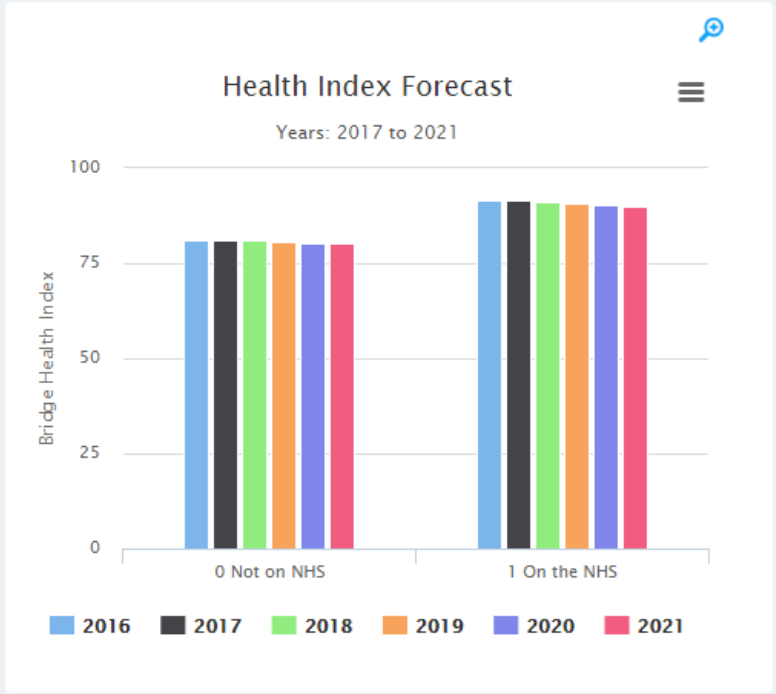


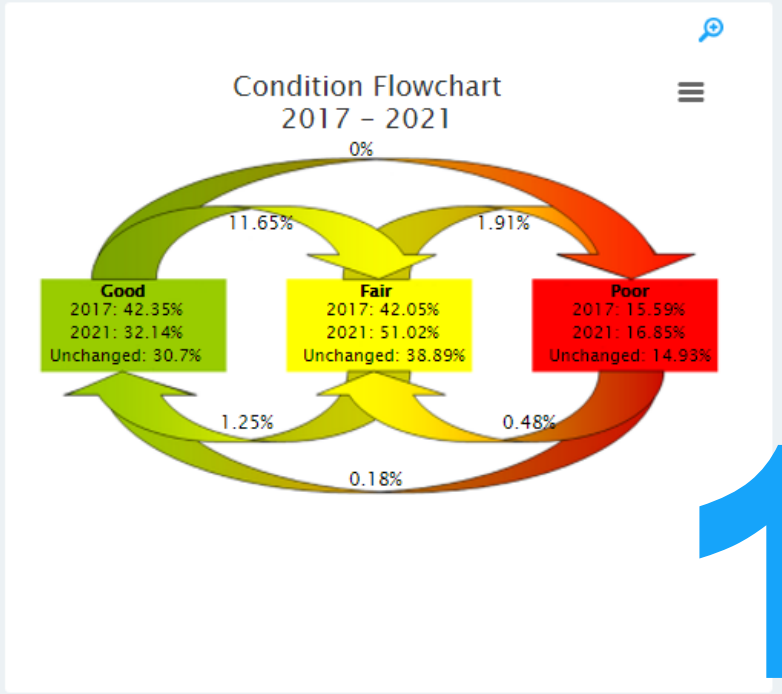


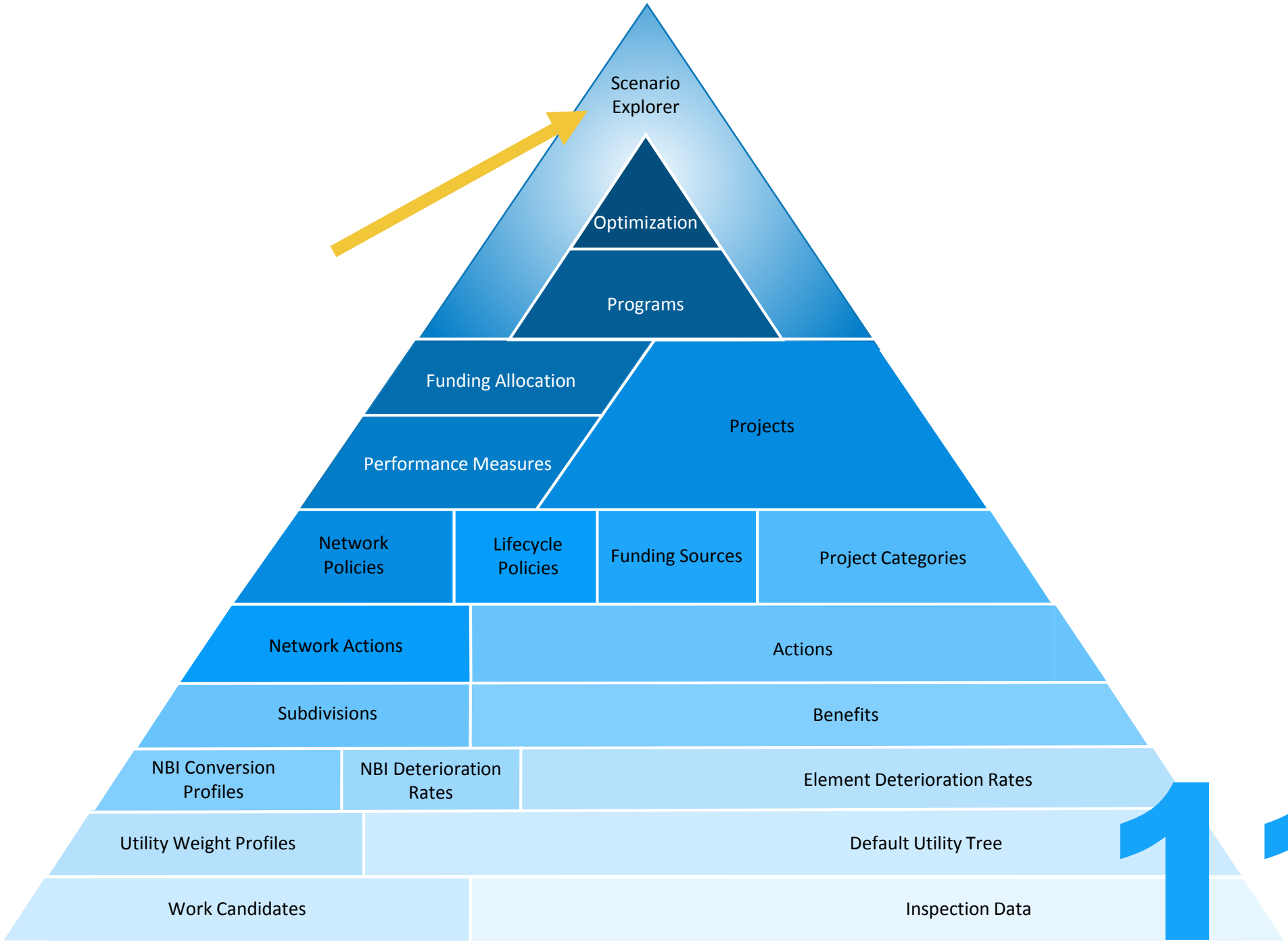
Funding Allocation



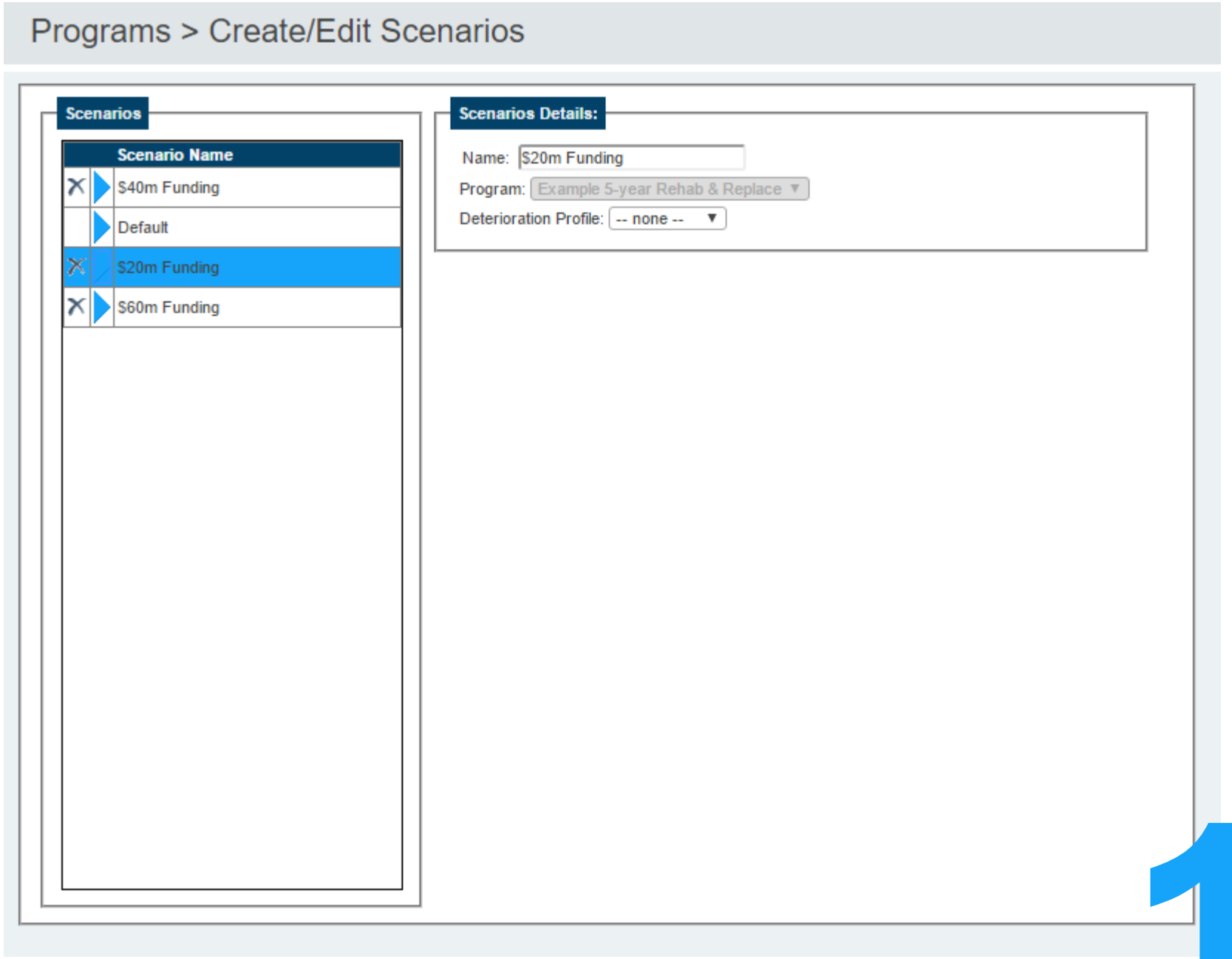




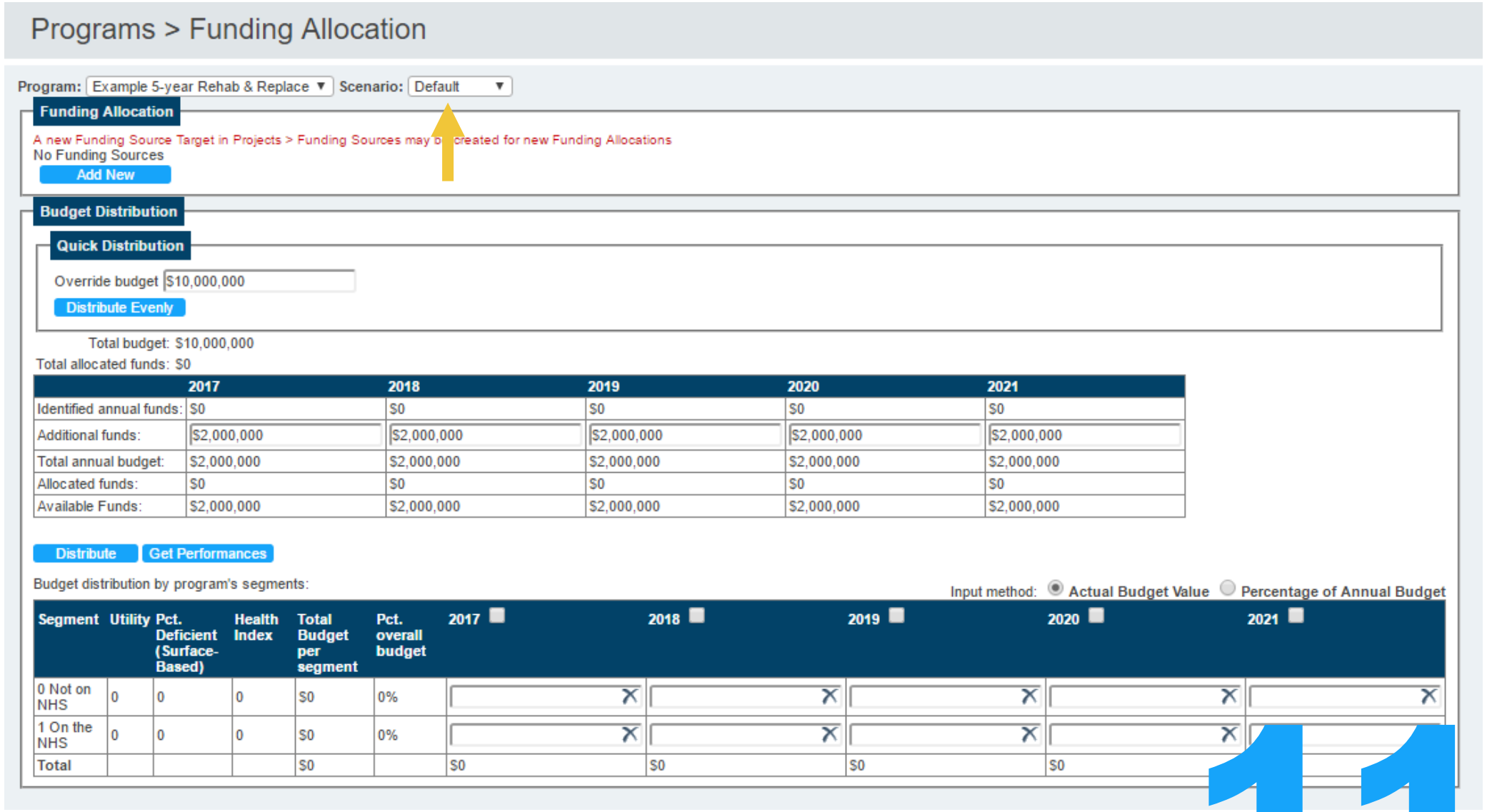



Scenario Explorer
Optimization
Programs
Funding Allocation
Performance Measures
Projects
Network Policies
Lifecycle Policies
Funding Sources
Project Categories
Network Actions
Actions
Subdivisions
Benefits
NBI Conversion Profiles
NBI Deterioration Rates
Element Deterioration Rates
Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

Funding Allocation



Funding Allocation



	2017	2018	2019	2020	2021
Identified annual funds:	$0	$0	$0	$0	$0
Additional funds:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Total annual budget:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Allocated funds:	$0	$0	$0	$0	$0
Available Funds:	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000

Segment	Utility	Pct. Deficient (Surface-Based)	Health Index	Total Budget per segment	Pct. overall budget	2017	2018	2019	2020	2021
0 Not on NHS	0	0	0	$0	0%					
1 On the NHS	0	0	0	$0	0%					
Total				$0		$0	$0	$0	$0	

Funding Allocation

Programs > Program Planning

Optimize Program

Program: Example 5-year Rehab & Replace ▼ Run Optimization
Scenario: Default ▼
Optimization Method: Maximize Utility ▼
Keep assigned projects: No ▼
Run on all scenarios: Yes ▼
Respect external frozen projects: Yes ▼

Program Information

Start Year: 2017
End Year: 2021
Utility Weight Profile: Sample
Assigned Network Policies: Rehab Culvert, Replace Bridge, Replace Culvert, Rehab Super, Replace Deck, Rehab Sub, Rehab Deck

Subdivision Profile: NHS status
NBI Deterioration Method: NbiConverter
NBI Converter Profile: BrM Default

Optimization Progress

Complete!

Progress Messages

Get Project Alternatives	9/14/2016 11:31:04 AM
Getting work candidates	9/14/2016 11:31:04 AM
Processing Segment 2	9/14/2016 11:31:05 AM
Persisting Segment 2's Results	9/14/2016 11:38:34 AM
Year: 2017 Project Count: 170	9/14/2016 11:39:17 AM
Year: 2018 Project Count: 53	9/14/2016 11:39:42 AM
Year: 2019 Project Count: 22	9/14/2016 11:40:01 AM
Year: 2020 Project Count: 15	9/14/2016 11:40:18 AM
Year: 2021 Project Count: 9	9/14/2016 11:40:36 AM
Processing Segments Completed	9/14/2016 11:40:40 AM
Finalizing Data	9/14/2016 11:40:40 AM
Program Optimization Complete	9/14/2016 11:40:40 AM

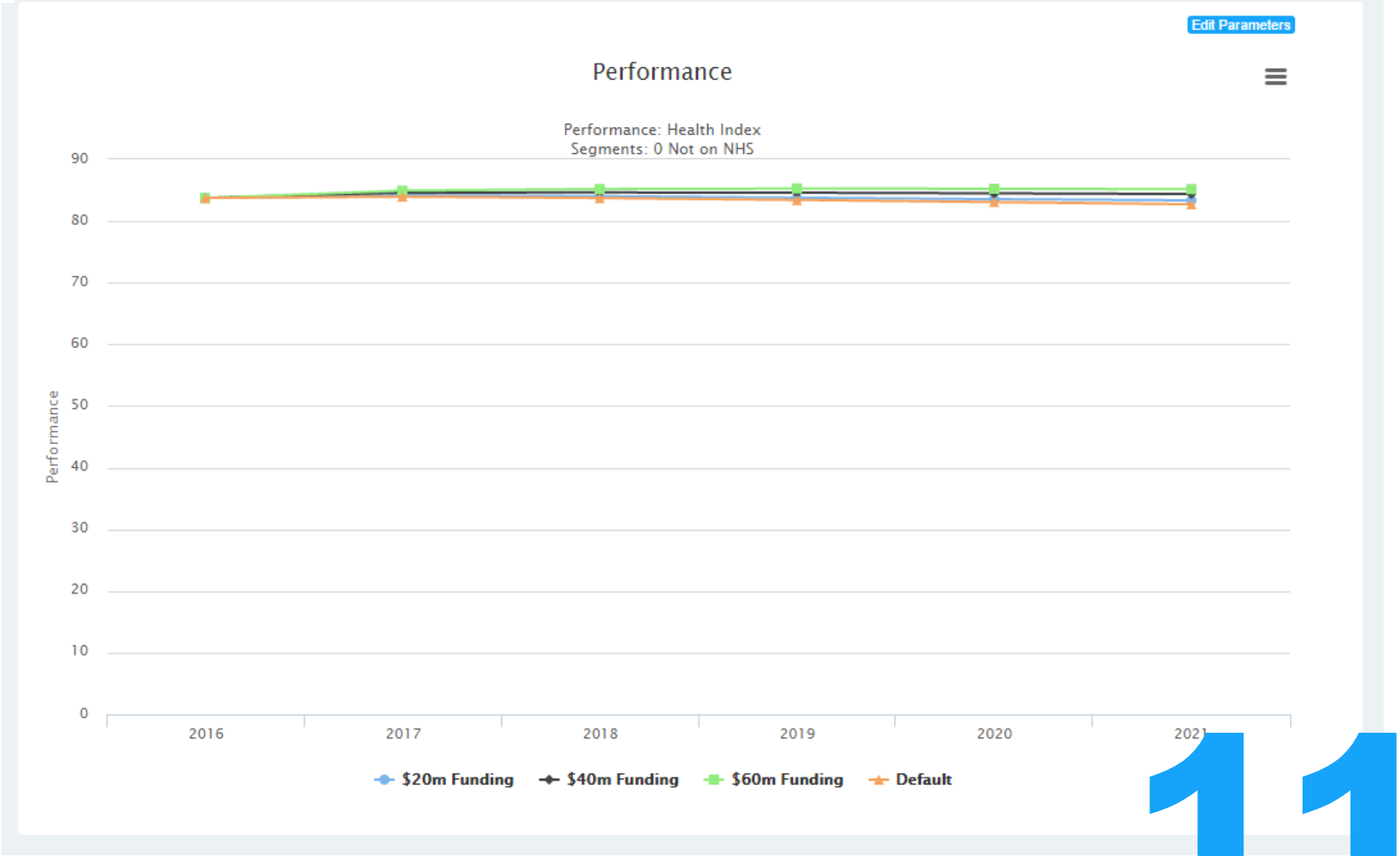
Assigned Projects

Segment: All ▼ Year: All ▼

Project Name	Category	Automatic	Cost	Utility	Utility Benefit	Benefit/Cost ($k)	Cost ($k) / Benefit	Year	Frozen	Status
021206(Rehab Culvert)	No Category	Yes	$29	91.14	0.03	1.0509	$0.95	2021	No	Proposed
020956(Rehab Culvert)	No Category	Yes	$168	90.51	0.02	0.1194	$8.38	2021	No	Proposed
020955(Rehab Culvert)	No Category	Yes	$187	89.81	0.03	0.1601	$6.25	2021	No	Proposed
020786(Rehab Deck)	No Category	Yes	$1,452	88.88	0.71	0.489	$2.05	2017	No	Proposed
020774(Replace Deck, Replace Super)	No Category	Yes	$75,566	57.04	14.75	0.1952	$5.12	2018		Proposed
020762(Rehab Deck)	No Category	Yes	$62	65.53	0.03	0.4841	$2.07	2017		Proposed
020738(Rehab Culvert)	No Category	Yes	$121	89.46	0.25	2.0619	$0.49	2021		Proposed
020726(Replace Deck, Replace Super)	No Category	Yes	$148,436	77.57	20.62	0.1389	$7.20	2020	No	Proposed
020714(Replace Deck)	No Category	Yes	$42,400	84.9	6.54	0.1542	$6.48	2020	No	Proposed
020702(Replace Deck, Replace Super)	No Category	Yes	$128,800	71.73	31.96	0.2481	$4.03	2018	No	Proposed
020620(Rehab Deck)	No Category	Yes	$2,705	90.7	1.93	0.7135	$1.40	2017	No	Proposed
020553(Rehab Culvert)	No Category	Yes	$66	85.37	0.03	0.4536	$2.20	2021	No	Proposed
020492(Rehab Deck)	No Category	Yes	$9,442	86.38	1.26	0.1334	$7.49	2020	No	Proposed
020473(Rehab Deck)	No Category	Yes	$44	70.9	0.02	0.4576	$2.19	2018	No	Proposed

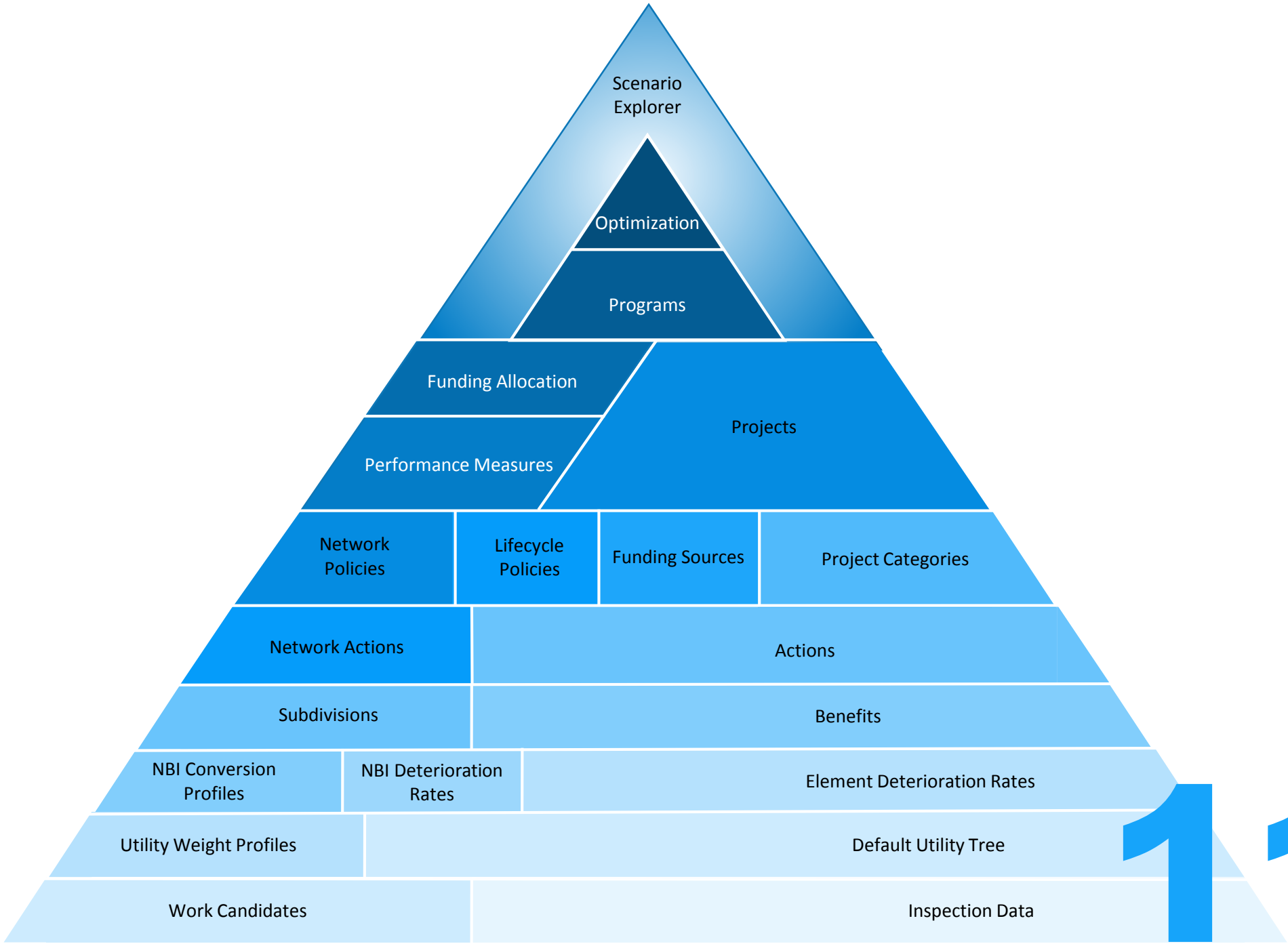
Funding Allocation

Programs > Scenario Explorer



Funding Allocation

Programs > Scenario Explorer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Element Deterioration Rates
Utility Weight Profiles
Default Utility Tree
Work Candidates
Inspection Data

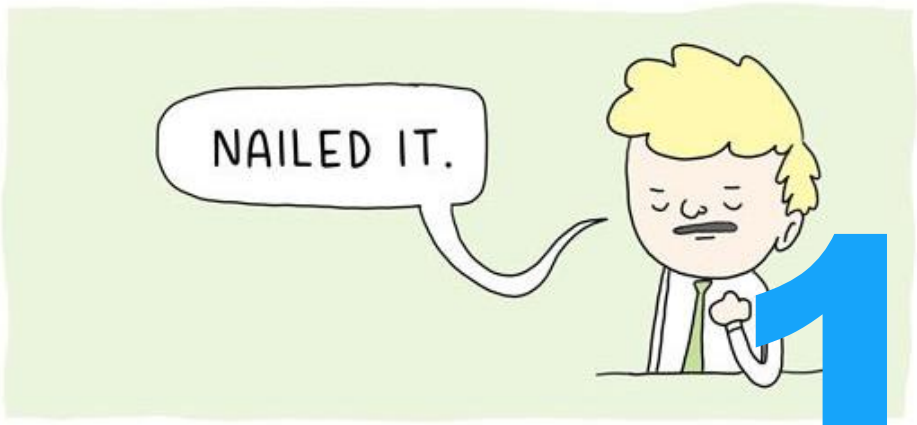

AND THAT CONCLUDES MY PRESENTATION. ANY COMMENTS OR FEEDBACK?


YES, HELLO, HI.


THOUGH I HAVE NO VALUABLE INPUT, I FEEL THE NEED TO COMMENT. I WANT TO MAKE SURE MY SUPERIORS NOTICE THAT I AM ATTENTIVE AND PARTICIPATORY IN THIS MEETING.


BASICALLY, I'M ONLY TALKING TO HEAR MYSELF SPEAK. HOPEFULLY, THIS COMMENT WILL IMPROVE MY REPUTATION WITH UPPER MANAGEMENT.


YOUR COMMENT HAS BEEN NOTED AND WE RECOGNIZE YOUR PARTICIPATION. YOUR JOB IS MORE SECURE THAN IT WAS BEFORE.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BrM@Bentley.com
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Zachary Boyle, PE
BrM Solutions Consultant
Zac.Boyle@Bentley.com
Or add '@ZacBoyle' to your JIRA tickets

120