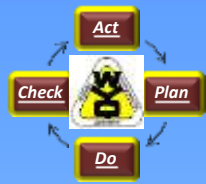


The background image shows a road construction site. In the center, a stop sign is visible, with a 'NO RIGHT TURN' sign below it. To the right, there is a 'DO NOT ENTER' sign. The scene is slightly blurred, suggesting a focus on the text overlaid on the image.

WYDOT Pavement Preservation

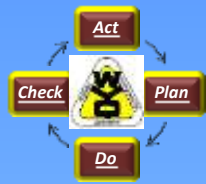
**Rocky Mountain Pavement
Preservation Partnership
October 4-6, 2011**

Greg Milburn



Pavement Management System

- Data Management
- Historical Pavement Performance
- Analytics
 - Performance Projections
 - Funding Optimizations (strategy selection)
 - Project Rehabilitation timeline
 - Project Recommendations



Pavement Treatment Types

- Maintenance
 - Chip Seal
 - Crack Seal
 - Patching
 - Isolated slab replacement (concrete)





Pavement Treatment Types

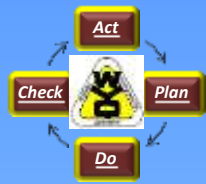
- 1R – preventative
 - Microsurface
 - Thin overlay (< 2")
 - Mill & wearing course
 - Grind & texture (concrete)
- 2R – minor rehabilitation
 - Level and/or mill & overlay
 - Full Depth Reclamation
 - Dowel bar retrofit (concrete)



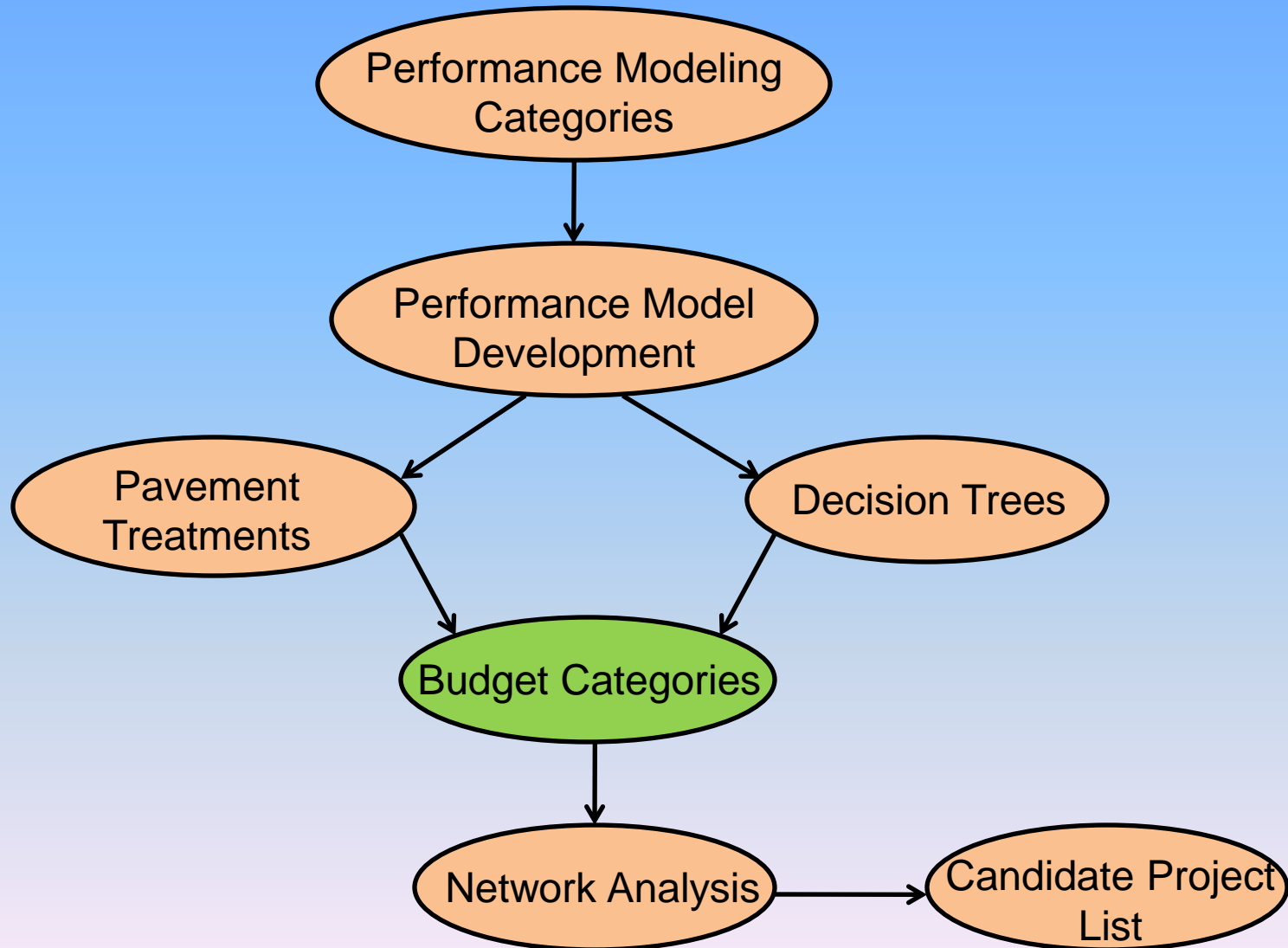


Pavement Treatment Types

- 3R – major rehabilitation
 - Widen & overlay
 - Full Depth Reclamation
 - Crack and seat & overlay
- 4R – full reconstruction
- Mobility – traffic capacity
 - Extra lanes

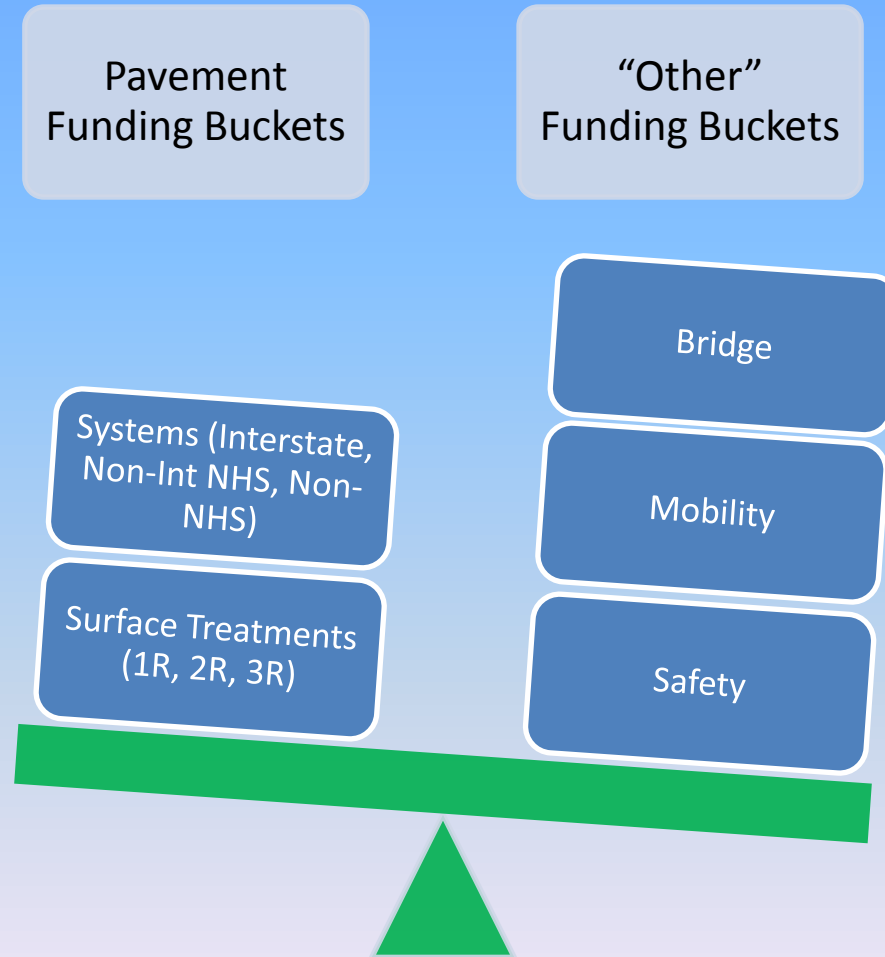


Pavement Management Flow Chart





Balancing System Needs

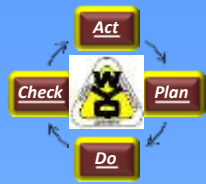




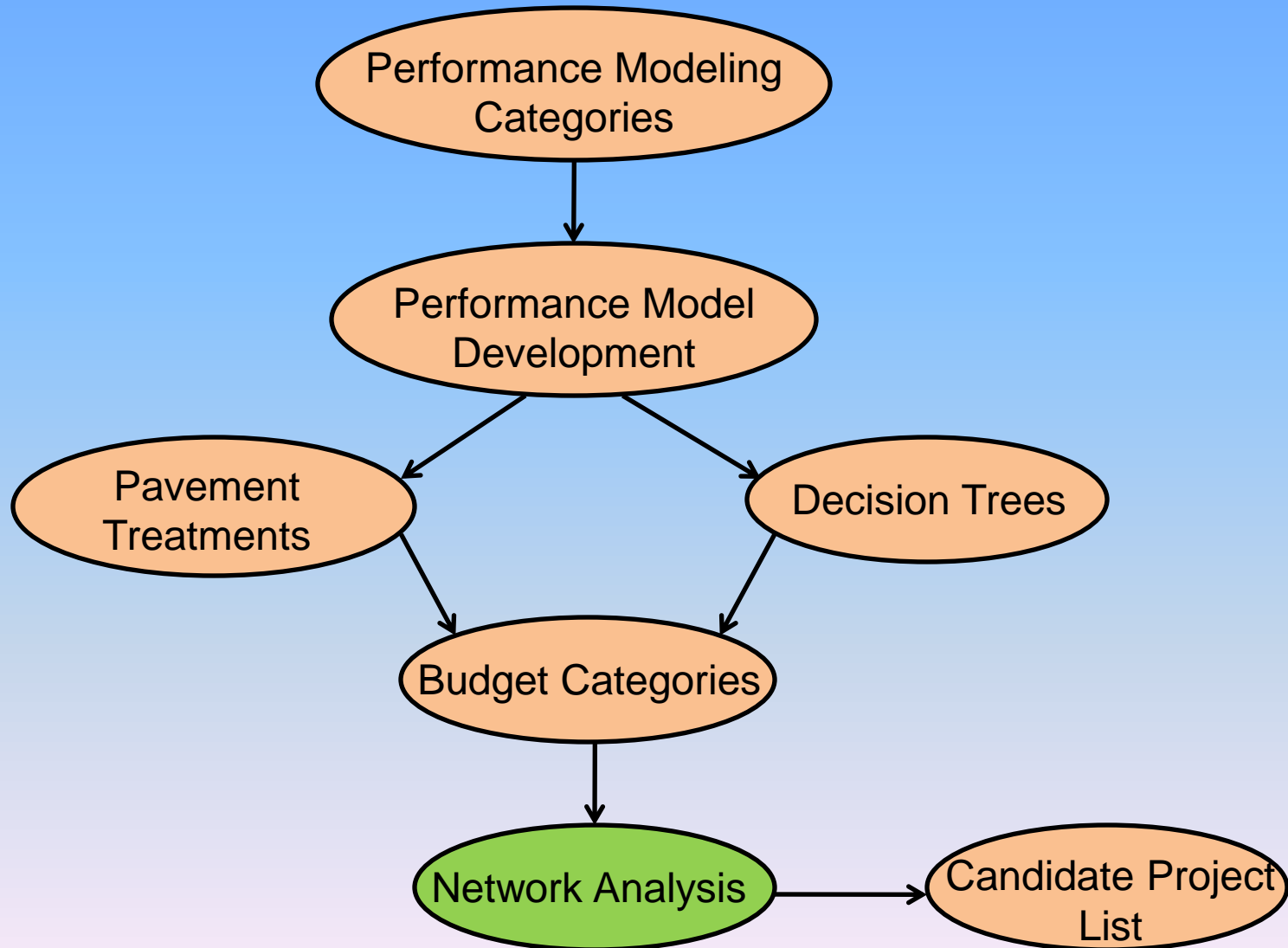
Budget Categories

- 9 Pavement Funding “Buckets”
 - Interstate
 - 1R, 2R, 3R
 - Non-Interstate NHS
 - 1R, 2R, 3R
 - Non-NHS
 - 1R, 2R, 3R



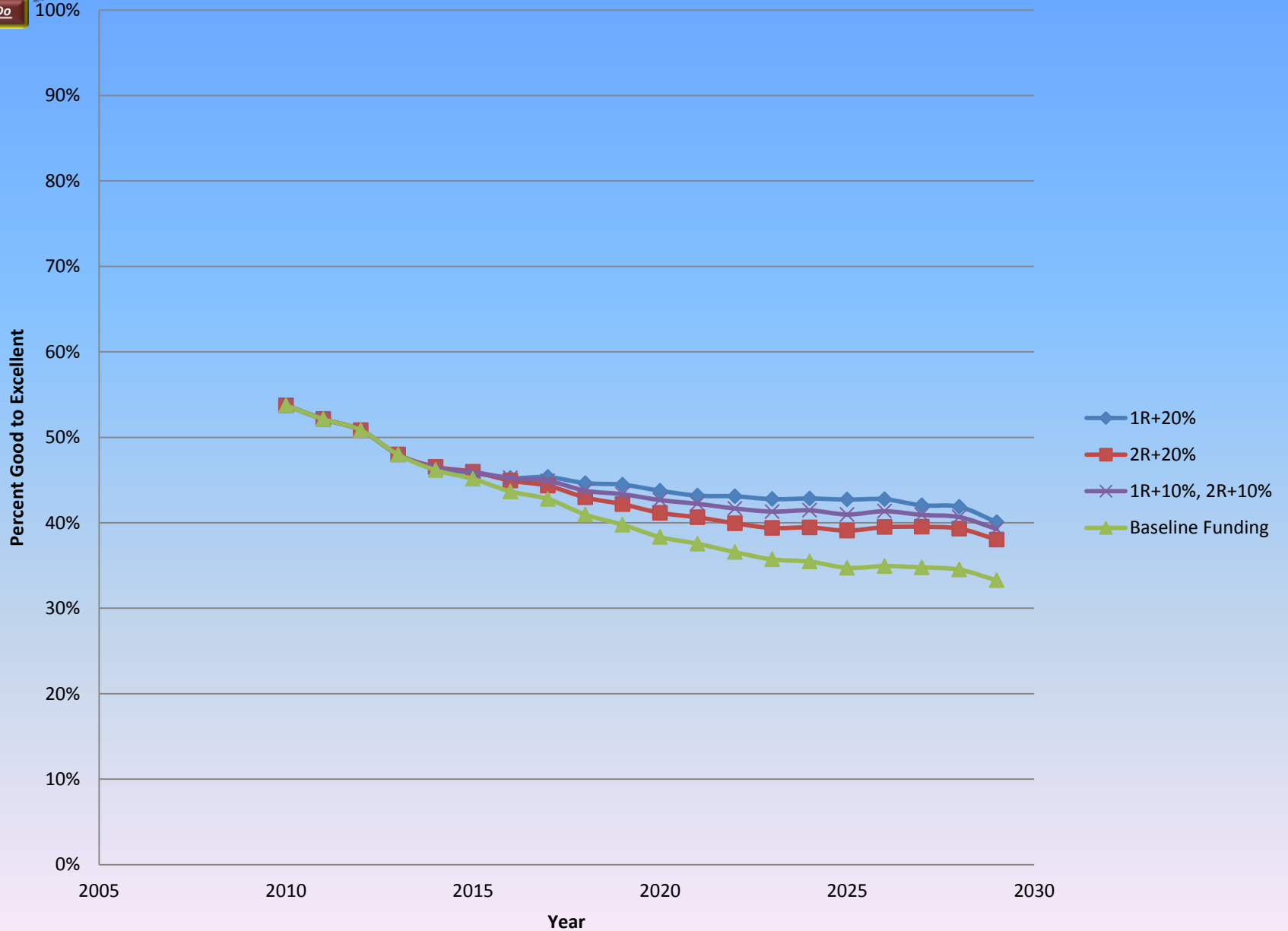


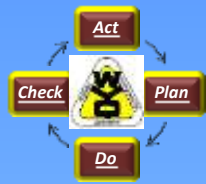
Pavement Management Flow Chart



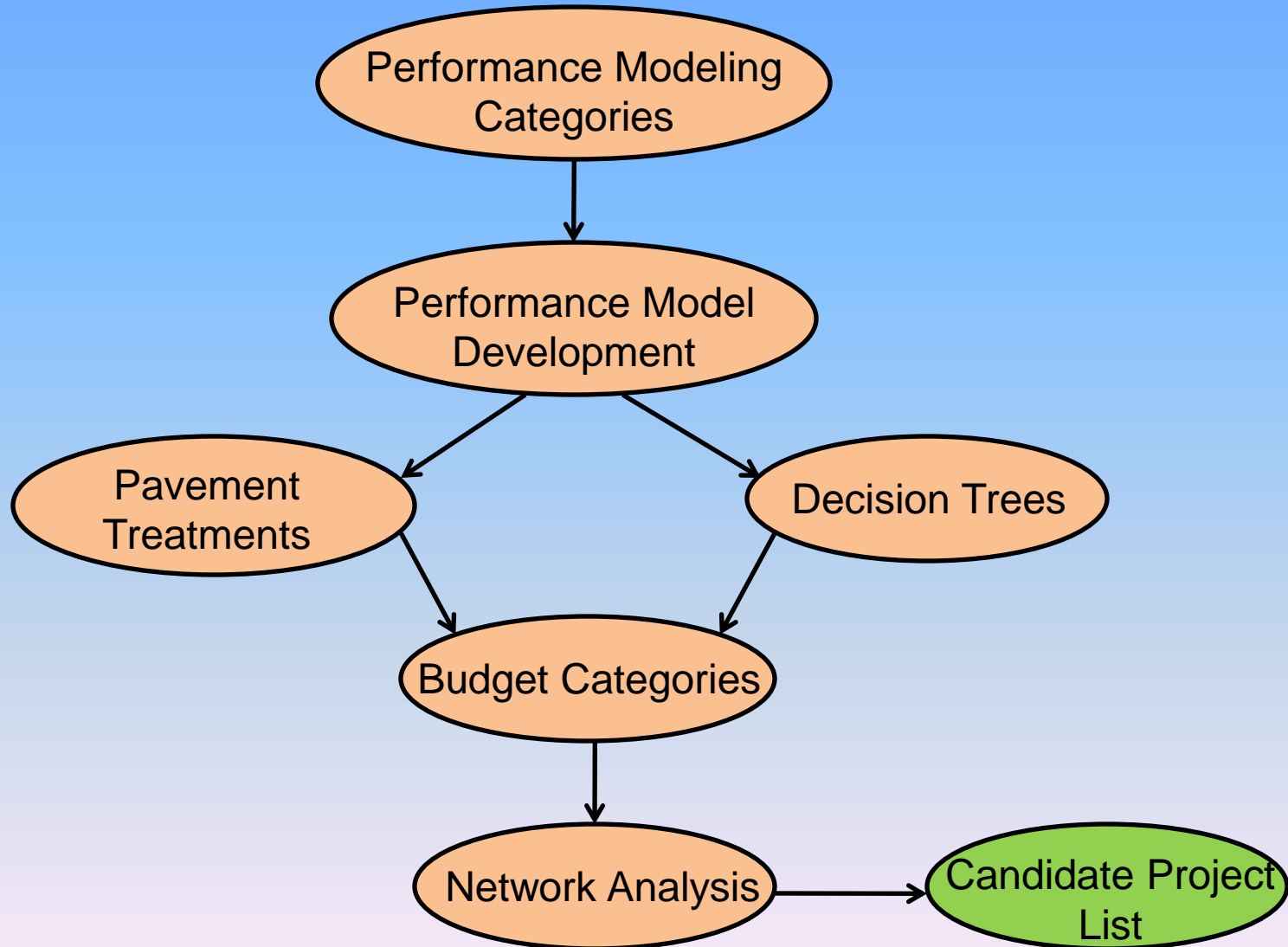


Overall System Condition by Treatment Split





Pavement Management Flow Chart



AgileAssets Management System [PRODUCTION] v. 5.0 (Build 5196)



Road Maintenance Linear Asset Mgmt Resources System

Utilities Setup Database Analysis Linear Network Tools Reports

Setup Results Calc. Process

WP 65 pages (1297 rows)

Route	Direction	Lane	Start MP	End MP	PLAN YEAR	Treatment	MWP Project Status	PROJECT PRICE	RSC	Length	Section Width	PMS PRIORITY	BU
ML1903	Both	All	0	2.22		1R TREATMENT - URBAN	Preliminary	602900.1176	HPM over Base	2.22	43.2396	1.06	Ur
ML191	Both	All	1.099	11.71	6	SURFACE PREP & OL (<50 ESALS)	Preliminary	3748776.6634	HPM over Base	10.611	30	4	Nd
ML20	Both	All	6.412	12.785	6	SURFACE PREP & OL - NHS (50-500 ESALS)	Preliminary	2755884.1365	HPM over Base	6.373	36.7202	2	Nd
ML200	Both	All	121.884	125.588	6	1R TREATMENT (<50 ESALS)	Preliminary	859769.3122	HPM over Base	3.704	36.9573	2	Nd
ML206	Both	All	0	1.076	6	"LIGHT" 3R - NON NHS	Preliminary	810968.9823	HPM over Base	1.076	24	4	Nd
ML208	Both	All	2.498	8.999	6	1R TREATMENT (<50 ESALS)	Preliminary	1224932.4708	HPM over Base	6.501	30	2	Nd
ML211	Both	All	4.07	17.187	6	SURFACE PREP & OL (<50 ESALS)	Preliminary	4310830.3611	HPM over Base	13.12	27.9007	4	Nd
ML212	Both	All	3.243	5.363	6	1R TREATMENT - URBAN	Preliminary	690335.4369	HPM over Base	2.12	51.8458	2	Ur
ML22	Both	All	122.071	126.921	6	1R TREATMENT (<50 ESALS)	Preliminary	992796.9207	HPM over Base	4.994	31.652	2	Nd
ML23	Dec	All	301.013	308.53	6	"LIGHT" 3R - NON NHS	Preliminary	7465305.3387	HPM over Base	7.517	31.6244	4	Nd
ML23	Dec	All	325.27	326.897	6	1R TREATMENT - NON NHS (50-500 ESALS)	Preliminary	448483.0653	HPM over Base	1.627	21.9441	2.31	Nd
ML24	Both	All	0.497	5.669	6	SURFACE PREP & OL (<50 ESALS)	Preliminary	2192278.8836	HPM over Base	5.172	35.9936	4	Nd
ML24	Both	All	5.669	10.841	6	SURFACE PREP & OL (<50 ESALS)	Preliminary	2192668.6914	HPM over Base	5.172	36	4	Nd
ML25	Inc	All	81.5	94.84	6	SURFACE PREP & OL - INT (500-2500 ESALS)	Preliminary	5655491.1722	HPM over Base	13.34	36	6.89	Int
ML25	Dec	All	145.6	150	6	"LIGHT" 3R - INT	Preliminary	4697992.5557	HPM over Base	4.4	34	14.53	Int
ML25	Dec	All	210.41	219	6	1R TREATMENT - INT (500-2500 ESALS)	Preliminary	2050158.73	HPM over Base	8.59	38	4.84	Int
ML25	Dec	All	254	263.7	6	"LIGHT" 3R - INT	Preliminary	11524530.6009	HPM over Base	9.7	37.833	9.5	Int
ML25	Dec	All	263.7	272.11	6	"LIGHT" 3R - INT	Preliminary	9349873.8435	HPM over Base	8.41	35.4021	9.49	Int
ML271	Both	All	0	3.189	6	1R TREATMENT (<50 ESALS)	Preliminary	440644.0665	HPM over Base	3.189	22	2	Nd
ML272	Both	All	0	3.321	6	1R TREATMENT (<50 ESALS)	Preliminary	542316.8647	HPM over Base	3.321	26	2	Nd

- Quick Links
- Decision Trees
 - Network Anal
 - Treatments
 - Pavement Structure (Pro

Location Reference
Basic LRS



Budget 87 pages (260 rows)

PLAN YEAR	Budget Group	Budget Constraint	B
2009	Interstate - 1R (...)	8500000	2
2009	Interstate - 2R (...)	6500000	
2009	Interstate - 3R (...)	26000000	2

Index 7 pages (20 rows)

PLAN YEAR	Index Constraint	INDEX RES
2009	80	65.5329
2010	80	65.5586
2011	80	65.252

RSL 7 pages (20 rows)

PLAN YEAR	RSL Constraint	RSL RES
2009	10	13.4345
2010	10	13.541
2011	10	13.4613

% above Thr 7 pages (20 rows)

PLAN YEAR	Condition Threshold	Condition Perc
2009	80	
2010	80	
2011	80	



Project candidate list

Route	Direction	Treatment	Start MP	End MP	District #	Length	Year
ML42	Both	2R TREATMENT (<50 ESALS)	100	102.045	2	2.045	2012
ML43	Both	1R TREATMENT - NHS (50-500 ESALS)	18.212	19.3	2	1.088	2012
ML47	Both	3R TREATMENT - NHS	0	2.89	2	2.89	2012
ML57	Both	1R TREATMENT - NON NHS (50-500 ESALS)	79.423	80.885	2	1.462	2012
ML808	Both	2R TREATMENT - URBAN	0.45	1.66	2	1.21	2012
ML1301	Both	3R TREATMENT - NON NHS	7.496	8.909	2	1.413	2013
ML1401	Both	1R TREATMENT (<50 ESALS)	100	105.465	2	5.465	2013
ML21	Both	3R TREATMENT - NHS	44.772	51.063	2	6.291	2013
ML21	Both	1R TREATMENT - NHS (500-2500 ESALS)	65.098	72.139	2	7.041	2013
ML21	Both	3R TREATMENT - NHS	87.999	94.083	2	6.084	2013
ML21	Both	1R TREATMENT - NHS (500-2500 ESALS)	98	101.131	2	3.131	2013
ML256	Both	1R TREATMENT - URBAN	0	2.665	2	2.665	2013
ML27	Both	1R TREATMENT - NHS (50-500 ESALS)	8	10.245	2	2.245	2013
ML321	Both	2R TREATMENT (<50 ESALS)	55.18	57.781	2	2.601	2013
ML43	Both	1R TREATMENT - URBAN	0	2.789	2	2.789	2013
ML43	Both	1R TREATMENT - NHS (50-500 ESALS)	27.32	34	2	6.68	2013
ML502	Both	1R TREATMENT (<50 ESALS)	2.421	8.6	2	6.18	2013
ML504	Both	2R TREATMENT (<50 ESALS)	7.652	18.856	2	11.204	2013
ML85	Both	1R TREATMENT - NHS (50-500 ESALS)	61	62.75	2	1.75	2013
ML85	Both	1R TREATMENT - URBAN	92.018	93.107	2	1.089	2013
ML94	Both	3R TREATMENT - NON NHS	3.29	12.792	2	9.5	2013
ML191	Both	2R TREATMENT (<50 ESALS)	1.099	11.71	2	10.611	2014
ML20	Both	2R TREATMENT - NHS (50-500 ESALS)	6.412	12.785	2	6.373	2014
ML25	Inc	2R TREATMENT - INT (500-2500 ESALS)	81.5	94.84	2	13.34	2014
ML25	Dec	3R TREATMENT - INT	145.6	150	2	4.4	2014
ML25	Dec	1R TREATMENT - INT (500-2500 ESALS)	210.41	219	2	8.59	2014
ML25	Dec	3R TREATMENT - INT	254	263.7	2	9.7	2014
ML25	Dec	3R TREATMENT - INT	263.7	272.11	2	8.41	2014
ML271	Both	1R TREATMENT (<50 ESALS)	0	3.189	2	3.189	2014



AVERAGE PAVEMENT MILEAGE/YEAR 2014-18								
	Total Statewide		Interstate		Non-Interstate NHS		Non-NHS	
	Mod Sys Splits	Mod Mile Splits	Mod Sys Splits	Mod Mile Splits	Mod Sys Splits	Mod Mile Splits	Mod Sys Splits	Mod Mile Splits
Dist 1 Total	30	26	28	20	2	1	9	4
1R	5	4	5	3	0	0	0	1
2R	12	7	11	5	1	1	0	1
3R	14	14	12	12	1	1	0	2
Dist 2 Total	27	36	13	20	7	10	4	10
1R	2	5	0	3	2	1	0	1
2R	10	12	4	5	3	5	3	2
3R	16	19	9	12	6	5	1	3
Dist 3 Total	41	27	19	14	19	8	4	3
1R	5	3	3	2	1	1	2	1
2R	11	8	0	3	10	4	0	1
3R	25	14	16	9	8	4	1	1
Dist 4 Total	33	28	15	18	3	5	10	4
1R	6	4	2	2	0	1	4	1
2R	10	9	4	4	4	3	1	1
3R	17	16	9	12	4	2	5	2
Dist 5 Total	9	20	0	0	3	16	7	7
1R	2	3	0	0	1	1	0	1
2R	4	10	0	0	3	8	2	1
3R	3	7	0	0	0	6	1	1



Next Steps

- Incorporate maintenance cost/mile
 - Could be used to better identify sections whose conditions are “masked” by maintenance
 - We hope to include this in decision trees in future
- Combine pavement, bridge, safety and maintenance management systems for project selection