

ASSET MANAGEMENT -ACHIEVING VISION 100 and OPERATION 2045

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ASSET MANAGEMENT AND VISION 100



Vertical assets are typically referred to as single location assets like buildings, bridges, assets (e.g., air conditioning units) within the buildings

Horizontal assets are typically assets that span an area like underground pipes, roads, runways, etc.

Asset Management is the set of strategies used to plan for the

- Maintenance,
- Rehabilitation, and the
- Capital Investment Replacement needs

of any of DEN's infrastructure asset, optimizing the asset's total cost of ownership

FIVE CORE QUESTIONS FOR ASSET MANAGEMENT



What is the current state of DEN assets?



What are DEN's required levels of service?



What DEN assets are critical?



What are the best Operation & Maintenance and Capital Improvement Plan investment requirements?



What is DEN's best long-term strategy?

TYPICAL ASSET LIFECYCLE

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DEN ASSET MANAGEMENT HISTORY





ASSET MANAGEMENT FLIGHT PATH



Late 2023 - Establish Fundamentals - COMPLETE

- Establish hierarchy of vertical assets
- Identify critical vertical asset classes
- Develop remaining useful life
- Identify rehab/replace assets
- Implement risk scoring

2026 – AM Program Build Out & Predictability

- Continue with horizontal assessments (pipes)
- Implement airside horizontal assets plan
- Develop landside horizontal assets plan (roads and bridges)
- Begin IOT implementation

2024-Data Collection & Completeness

- Implement predictability pilots
- Re-implement Maximo (90% phase 1 in 2024, phase 2 in 2025)
- Develop vertical asset life cycle program
- Develop a plan for horizontal assets
- Implement dashboard to support CIP



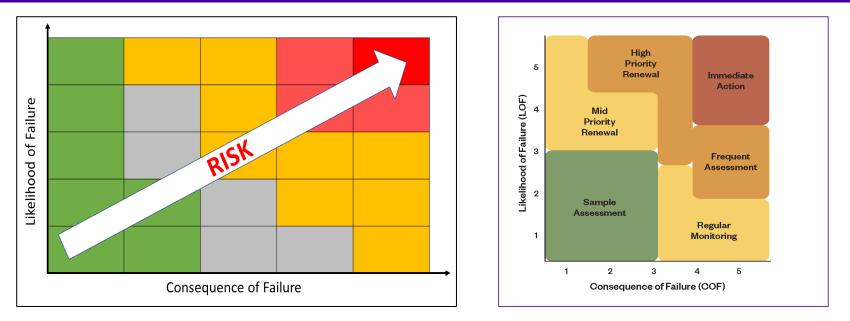
2025 – Horizontal Assets Introduction

- Begin horizontal condition assessments (pipes)
- Integrate horizontal assets into Maximo and BIM
- Implement life cycle planning in horizontal assets
- Release Internet of Things (IOT) RFP
- Develop airside horizontal assets plan

2027 – AM Program Build Out

- Continue with horizontal assessments (pipes)
- Implement landside road and bridge plan
- Validate current status of AM program
- Continue building life cycle capabilities

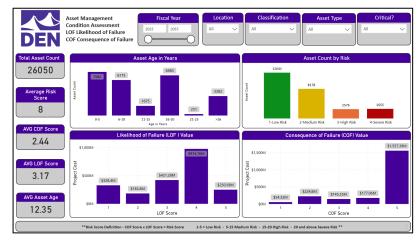
COF & LOF SET RISKS AND PROJECT PRIORITIZATION



- Likelihood of Failure (LOF) Definition: the likelihood of or timing to an asset's failure
- **Consequence of Failure (COF) Definition:** the expected system-wide significance associated with the failure of an asset
- Knowing the risk helps plan maintenance strategies as well

USING THE INFORMATION - AM DASHBOARD







Clear all Filters	Fiscal Year	Critical?		Asset Count by COF Score & LOF Score						
Group	2025 2055	All V	-		1	2	3	4	5	
Facility/Location	Total Asset Count	Total Asset Value		5	677	315	2200	1267	1207	
All ~	26050	\$2.16bn	e Score	4	17	26	58	189	181	
Mod/Direction	Severe Risk Count	Severe Risk Value \$1.09bn	of Failure Score	3	82	113	182	29	187	
Floor/Level	High Risk Count 2576	High Risk Value \$281.01M	Consequence	2	3032	1670	2923	738	3794	
All	Medium Risk Count	Medium Risk Value	Cons	1	1232	421	3184	503	1823	
Classification	Low Risk Count 12641 \$392.09M		Likelihood of Failure Score							
Asset Type				Asset T		Location RUL Critical Asset ? Risk Score Asset Age Project Cost				
Craft	22826 GENERATOR, CONTROLLER, MAINTENANCE CENTER BLD, NORTH SIDE OF PAINT SHOP, 65 KW, 277/480, 3 PHASE		GENERAT			FLT-MNT05 0 YES		25 25	\$809,060	
All V	TOWER #1,	TOWER #1, 175 KW, 120/208, 3 PHASE		GENERATOR				25 32 25 31	\$809,060	
	22832 GENERATOR CONTROLLER, FIXED, ANTENNA FARM, TOWER #2, 150 KW, 277/480, 3 PHASE		VENERATOR		TOK FU	-MN105 0	YES	25 31	5809,060	

Live Demonstration of the Asset Management Dashboard



THANK YOU!

ANY QUESTIONS?