

KEY ELEMENTS TO DEVELOPING AND IMPLEMENTING AN ASSET MANAGEMENT CONDITION ASSESSMENT PROGRAM

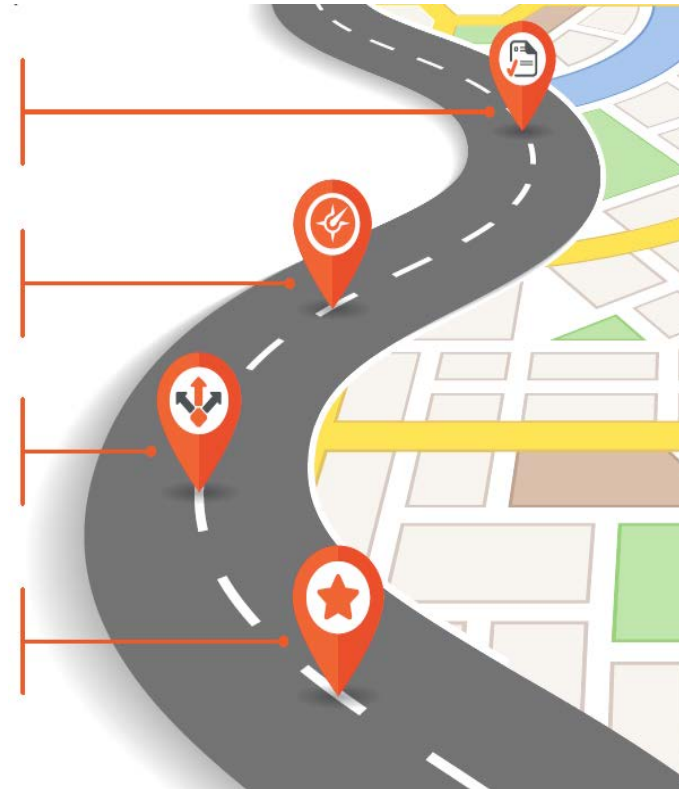
August 2016

The Asset Management Journey

- Asset management means different things to different businesses.
- It is critical to remember that asset management is not about creating complex frameworks, or found in a software implementation.
- Only when a precise definition of what asset management means to your organization can a solid business case be developed.

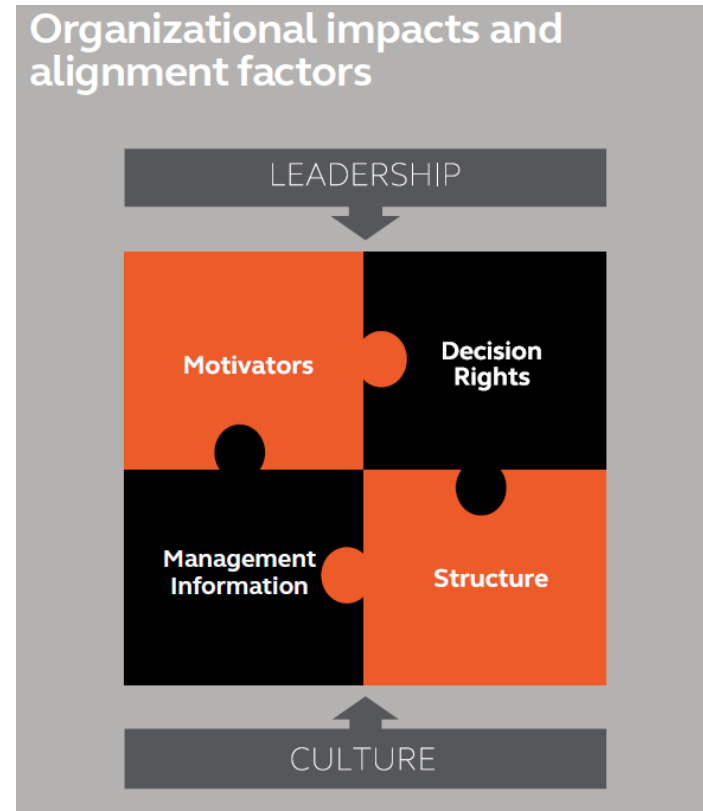
Key Elements

- Leadership
- Expectations of deliverables from your asset management program
- Establishing data requirements that will be the backbone of your program
- Utilizing information to make decisions and for evaluating performance



Leadership

- The critical ingredient is achieving true ownership across all levels of the organization which requires a cultural shift, from functional to business centric.
- It is not the creation of a new job mindset across the organization but creating a new culture, competencies, and accountabilities.



“If you don’t know where you are going any road will get you there” –Lewis Carroll

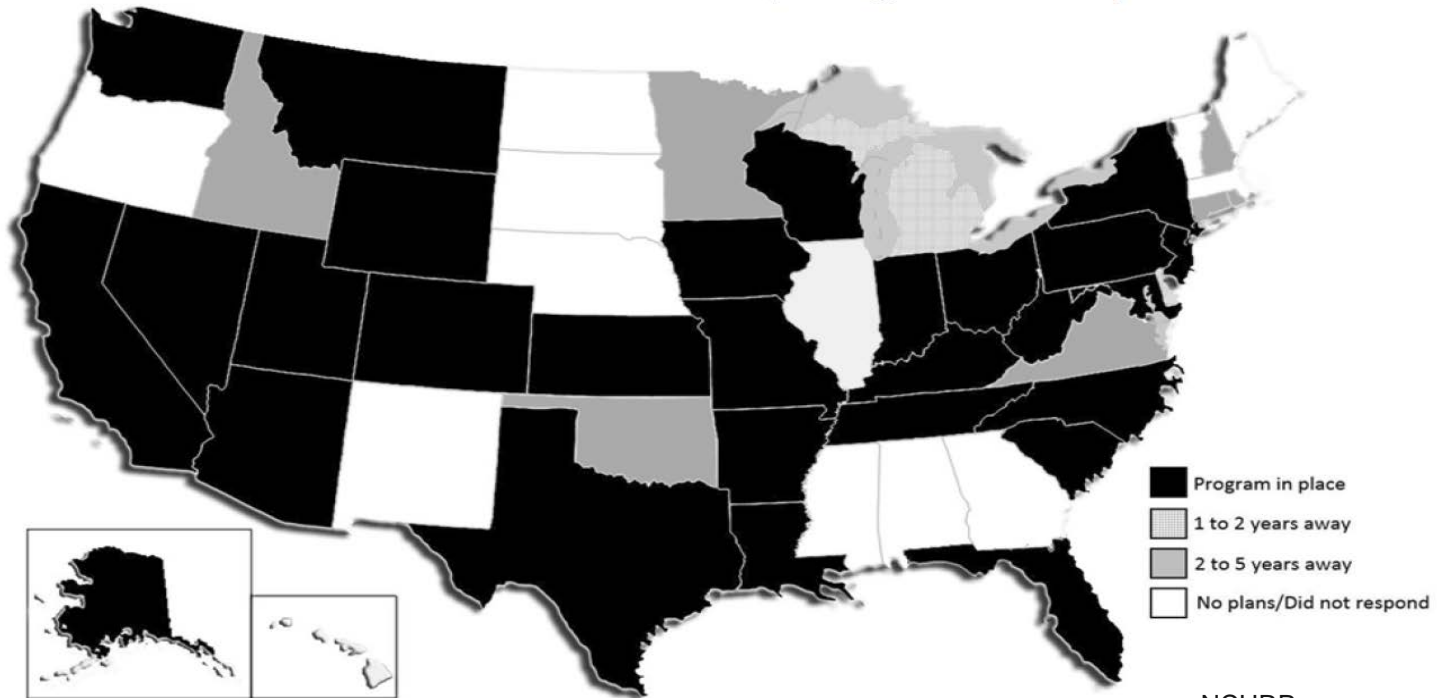
Asset Management Expectations

- Multi-year efforts
- Setting the right priorities
- Sequencing the elements of the program.
- Realistic
- Identify elements of the program that can jumpstart the desired organizational changes

Maintenance Rating (Asset Condition Assessment) Programs and the Benefits

Maintenance Rating Programs

- Programs have been around for a while
- Approximately 28 states are active in collecting asset information



Understanding the program

- Programs generally report on assets based on a Level of Service (LOS) breakdown (A-F, 1-5, etc.)
- The LOS are generally based on an extrapolated quantity from “representative sampling”
- So what is representative sampling?
 - If 100% of your network cannot be assessed, then a statistically valid sampling or “representative sampling” of the network is conducted,
- The further you drill down in representative sampling the increase in sampling points
- **Representation is very important for performance reviews**

Representative Sampling Selection

Elements to consider:

- z = Confidence Interval
- e = Margin of Error
- p = Expected Failure Rate (pass/fail rate)
- N = Total potential segments to represent (based on segment length)
- n = Required representative segments

$$n = \frac{(z^2)(p)(1-p)}{e^2 + \frac{(z^2)(p)(1-p)}{N}}$$

It all connects

Lets run through a scenario:

- If you set your confidence interval to 95% and your margin of error to 5%
- You are implying that you are 95% confident that you will get the same results within +/- 5% if you were to conduct the sampling again.
- So why does this matter?

It all connects

If the LOS ranges are “narrow” then you lose the reliability of the sample data.

Example: If the following LOS breakdown for an asset using 95% Confidence Level with a 5% Margin of Error is:

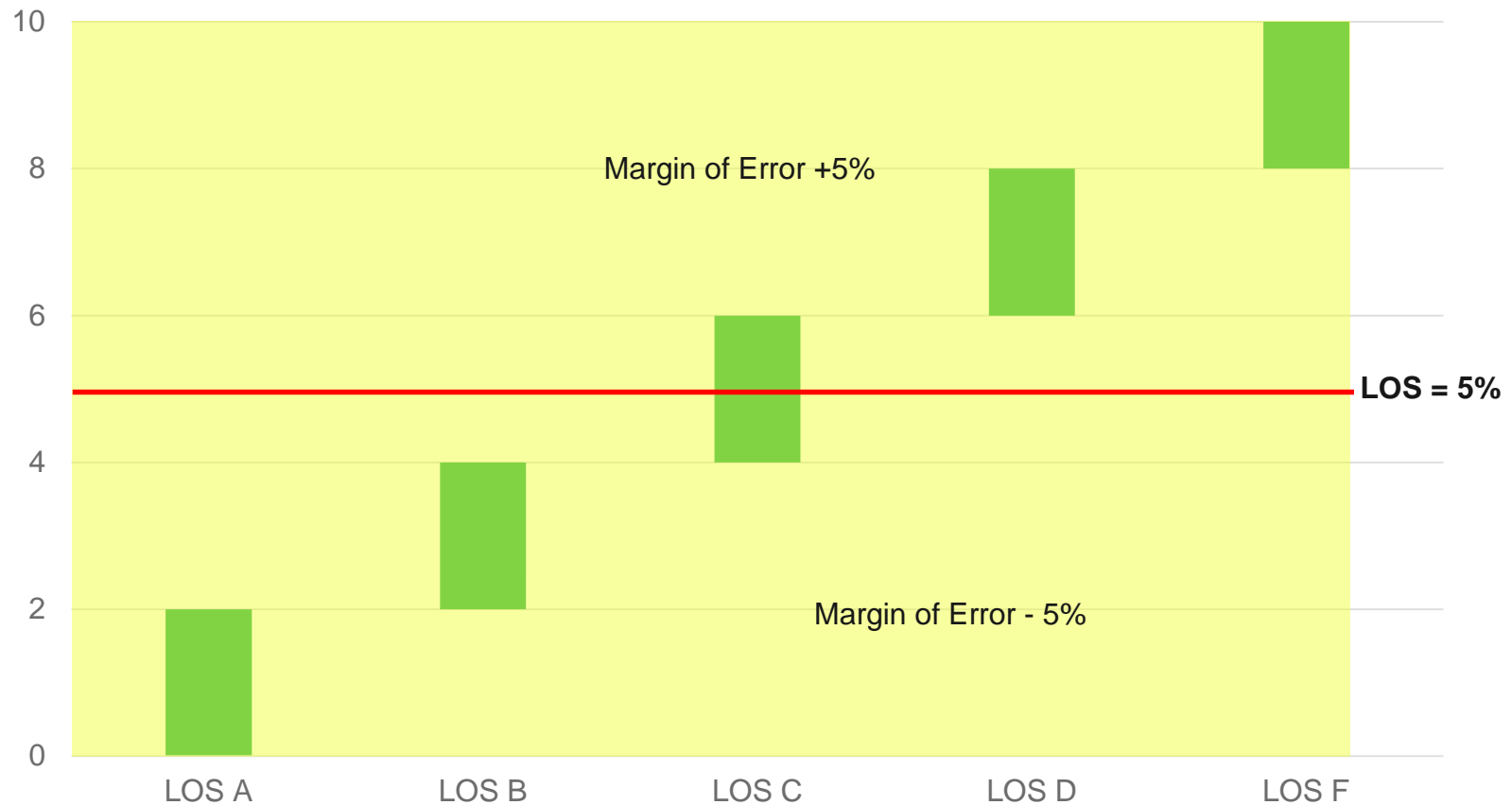
LOS A (0%-2%); LOS B (2%-4%); LOS C (4%-6%)

LOS D (6%-8%); LOS F (>8%)

- ❖ If my data resulted in 5% corresponding to a letter grade of C. Based on the parameters set it could actually be LOS A or LOS F due to the margin of error it can be as low as 0% or as high as 10% if the sampling was conducted again.

It all connects

Level of Service Chart



It all connects

- LOS ranges should be established with the margin of error in mind.
- Example: If the following LOS breakdown for an asset using 95% Confidence Level with a 5% Margin of Error is:

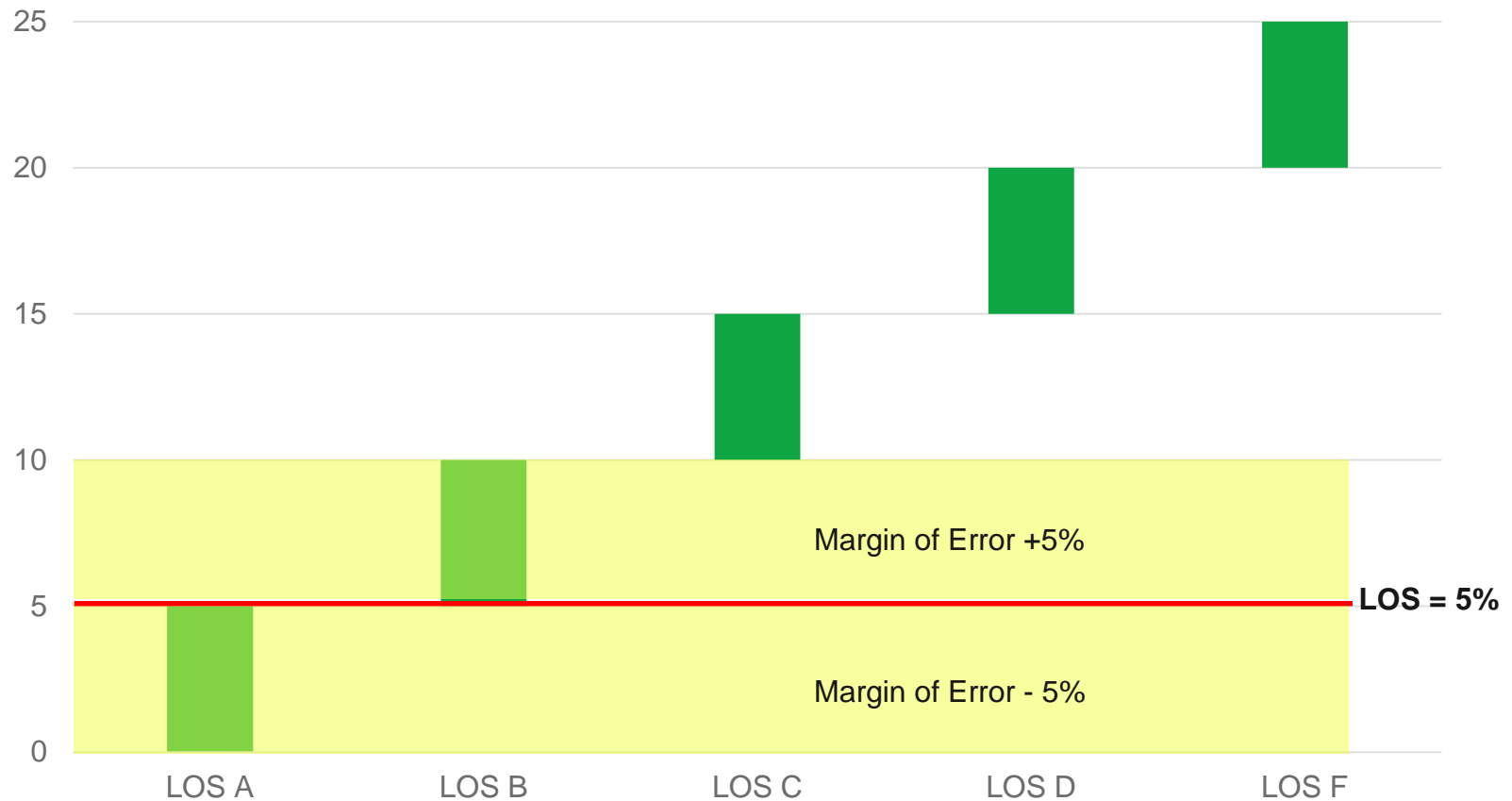
LOS A (0%-5%); LOS B (5%-10%); LOS C (10%-15%)

LOS D (15%-20%); LOS F (>20%)

- ❖ If my data resulted in 5% corresponding to a letter grade of A. Based on the parameters set it could be LOS A or LOS B.

It all connects

Level of Service Chart



Utilizing Results

Results

Elements that help budgeting processes:

- Having a established and well defined maintenance activity list that has established unit rates
- Ensuring the assessment criteria matches units of measure for the corresponding maintenance activity
- Knowing the average the unit rates for the activity (knowing contractor rate verses in-house rates)



Results

The Results can inform you on:

- What activities may need more scheduled work
- The condition of your assets
- Approximate spend in meeting a desired target
- How you are performing

Results

Results are not intended to:

- Tell personnel how to manage crews
- Where locational (X,Y) to conduct work activities
- Tell you a mandatory spend



Reporting

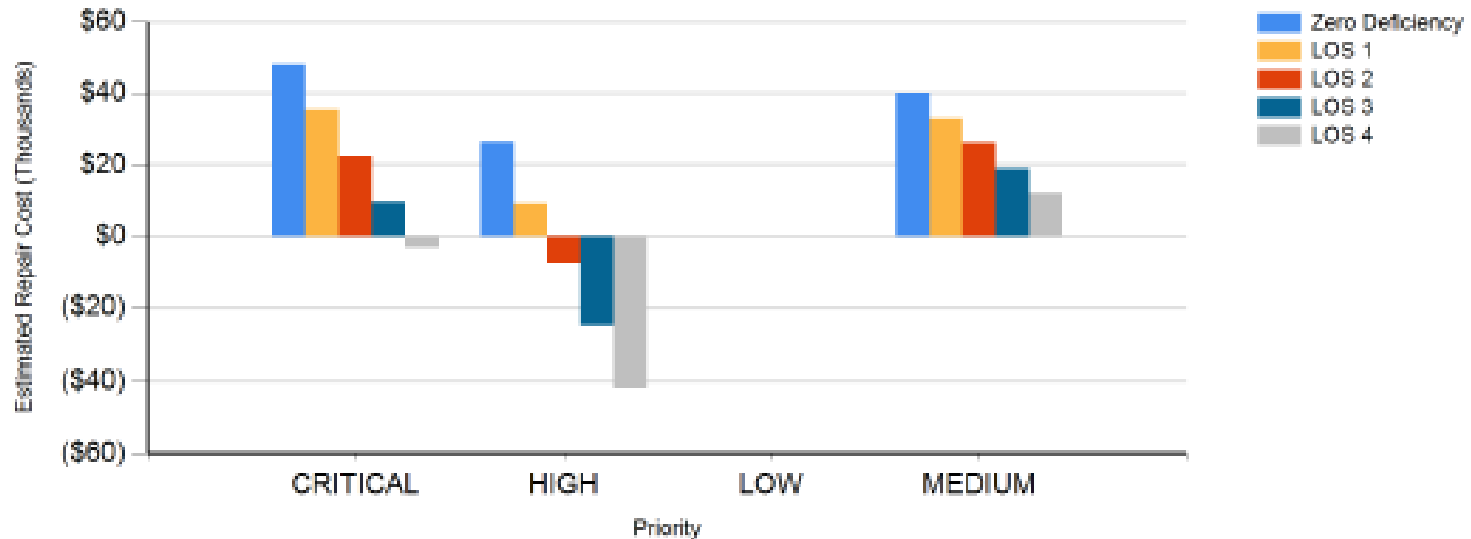
Warning Signs Asset Condition

Level of Service	District	CRITICAL	HIGH	LOW	MEDIUM	Total
3	Count	3,201	4,247	0	1,750	9,197
	Deficient	320	369	0	318	1,007
	Score	18.75 %	7.89 %	0.00 %	28.57 %	10.95 %
	LOS	4	2	1	5	3

Warning Signs Percent Deficient

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Cost Breakdown



Zero Deficiency	LOS 1	LOS 2	LOS 3	LOS 4
\$114,422	\$77,541	\$40,661	\$3,780	(\$33,100)

Priority				
Zero Deficiency	LOS 1	LOS 2	LOS 3	LOS 4
\$114,422	\$77,541	\$40,661	\$3,780	(\$33,100)

Representation for Performance Reviews

- At what level do you evaluate personnel on performance depends on the level of the data represents
 - For Example: My agency conducts condition assessments that are statistically representative at the District Level.
 - Can I hold a County Maintenance Supervisor accountable for meeting a desired LOS target when my data is not representative at the county level?



Evaluating Performance

Data/Information can be used differently at various levels in the organization:

For a Crew Member – Did I perform the required units that was identified to me?

For a County Foreman- Did I manage resources to the proper activities that was identified to me?

For a Area Engineer- Am I directing work to the appropriate activities that corresponds to where the LOS is lagging or excelling?

For a District Engineer- Did I allocate the appropriate funds and communicate to the Area Engineer where the LOS was lagging or excelling?

For a State Engineer – Am I providing the Districts with the appropriate funding level to allows the to achieve the desired LOS?

For a Commissioner – Am I securing the proper funding level to achieve the desired LOS statewide?

Important Takeaways

- It is a Journey
- Change is not EASY
- If the organization does not understand and embrace the changes, the success of an asset management program will never be fully realized.
- An Asset Condition Rating Program is only a piece of Asset Management within your organization.
- Communication, Communication, Communication

