





Better Decisions for Better Outcomes

Tacoma Zach, P.Eng., A55K,





Agenda for Considerations in Decision Making

- Awareness of decision-making influences
- Tough Budget mechanisms
- Lack of applying AM core principles
- Tangible examples to address 3 of the 4





Awareness of Decision Making Influences

- Bounded Reality
 - (work with best available)
- False Dichotomy
 - (A or B: a false choice, could be C or D too, NOT all or nothing)
- Non-Zero Sum Game
 - (expand opportunities)
- Correlation vs Causation
 - (A and B could be coincidence)

Monique Beedles, Asset Management for Directors, ©Australian Institute of Company Directors,
www.companydirectors.com.au



Decision Making Influences cont..

- Bias
 - Action (do something)
 - Status Quo (default, don't change)
 - Association (success tied to unrelated event)
 - Hindsight (skews perception of our abilities)
 - Availability (in our possession, yet is unrelated to the need)
 - Information (more is better...)
 - Self Serving (success = us, failure = others)

Monique Beedles, Asset Management for Directors, ©Australian Institute of Company Directors,
www.companydirectors.com.au



Use it or Lose it...Budget Thorns

- Budgeting issue:
- Spend shortfall met with indiscriminate spending to assure next year's budget
- Overstock
- Tangentially relevant items, not core risk based spend
- Consider how to address Value and Risk here





AM Core Principles Can Help

- Alignment
- Value From Assets
- Assurance (Risk Based Decisions)
- Leadership





Principles in Action

- Examples of evidence and
 - Alignment brings focus and opportunity
 - Better Risk Based Decisions improves outcomes
 - A discussion on Value from Assets:
 - Low Bid
 - Cost of Ownership – a consumer view
 - Band Aids and Symptoms
 - 'Value Plus'





The Environmental Services Division is responsible for:

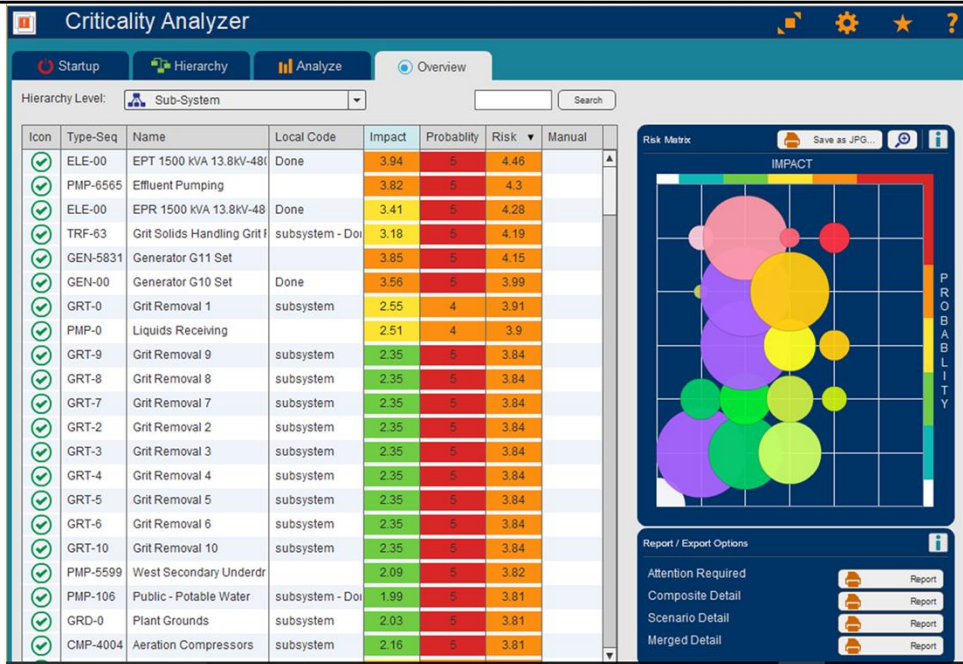
- 7 Wastewater Treatment Plants and 1 Water Reclamation Facility
 - that serve 108 communities
 - And treat an average of 250mgd per day
- Conveyance system that connects the community owned sewers to the treatment facilities
 - 600 miles of pipe, a combination of gravity and force mains
 - 61 lift and pumping stations
 - 206 metering sites, accuracy is a key, this is what we bill our customers by
- We are also responsible for:
 - Water quality monitoring both point source and non-point on regional lakes, streams and rivers.
 - Industrial pollution prevention, monitoring our connected industrial customers
 - Water supply planning for the regional area



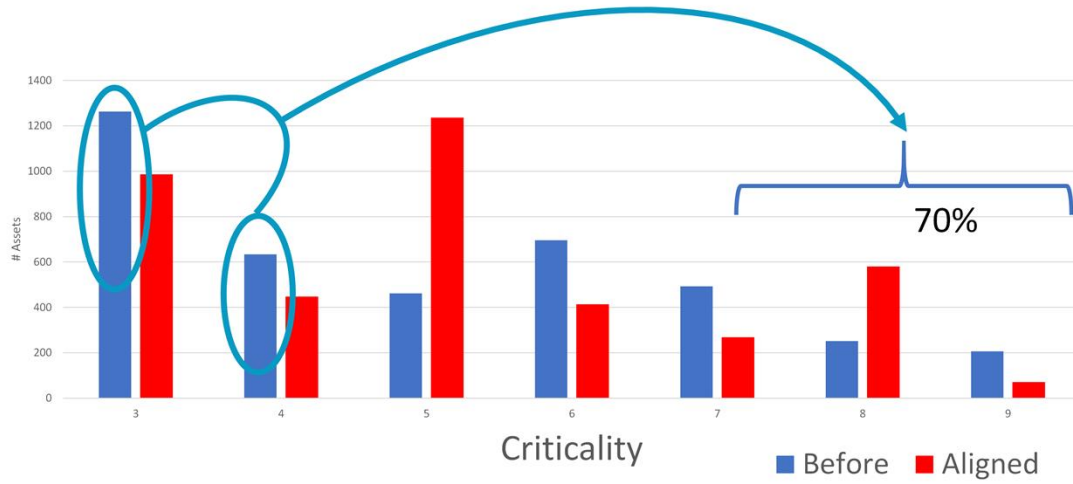
Alignment !

- Big Utility in the Midwest, incl. huge fluidized bed reactors
- Initial Criticality: only to “Process Significance”
- Revised Criticality Analysis: Aligned to All Core Values and Objectives:
 - Staff Safety
 - Public Health
 - Regulatory and Environmental
 - Production and Financial
 - PR and Customer Service
- Levels of Service





Old vs Aligned Criticality

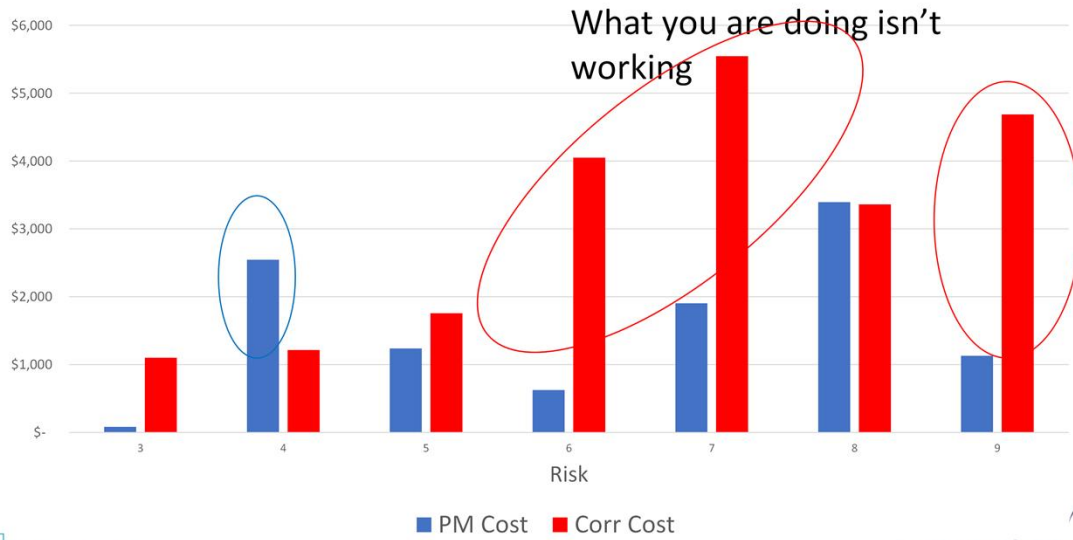


Align Resources with Criticality and Risk

Re-allocate \$5MM



Preventative and Corrective Cost by Risk



Change what you are doing to get a better outcome – Understand your assets better and how they fail

Estimated \$5+MM



\$5MM re-allocated
\$5MM est. savings

Better Alignment



Better Risk Based Decisions for Roads...



Symptoms vs Root Cause

- Current state of road repair is lagging dynamic assets
- Review of Several States across the US, incl. Federal Highway Program
 - Look at historical spend and where
 - project that on future conditions
 - some degree of likelihood attributed
 - Some include some economic impact of choices (better ones)
- but no treatment on the underlying cause
- Treating symptoms, alleviating issues from the symptoms without addressing the cause of the symptoms

Deal with the issue beneath the
surface...no matter how complex the
math is it's still just a fancy band-aid

A better risk based decision delivers a long term value impact





Low Bid: Limiting Value from Assets

- “We are living the results of our low bid policy. Not a single pump out there is identical”
 - Massive impact on spare parts, inventory, training, no volume discounts, higher maintenance costs
- Value Mindfulness needed



A View of Value Closer to Home

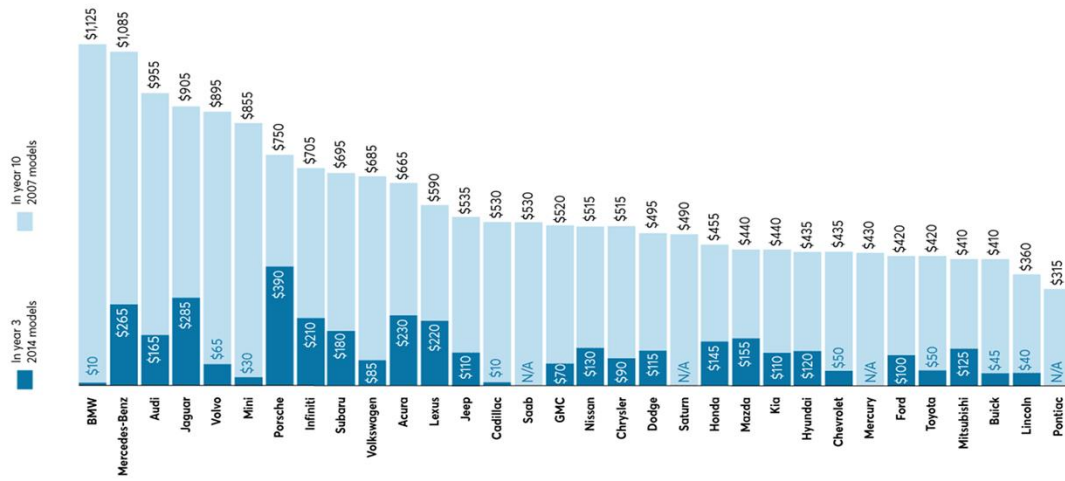
A counter point...



Maintenance and Repair Cost:

Consumer Reports 2017

Maintenance and Repair Cost



© 2017 Consumer Reports. All Rights Reserved.





A Step Further: Full Cost of Ownership

- “The estimates factor in depreciation, fuel cost, loan interest, insurance premiums, sales tax, and maintenance and repairs”
- ...Consumer Reports 2014





Consumer Reports Most and least expensive cars to own, beyond the purchase price.

Look beyond the purchase price
Published: March 14, 2014 09:00 AM

Least expensive		5-year owner cost	Most expensive	5-year owner cost
Subcompact cars	Toyota Prius C Two	\$24,600	Hyundai Veloster (base, manual)	\$32,400
Compact cars	Toyota Prius Four	\$28,200	Dodge Dart Aero (1.4T)	\$37,200
Midsized sedans	Toyota Camry Hybrid XLE	\$31,800	Volkswagen Passat SEL Premium (V6)	\$45,600
Large cars	Toyota Avalon Hybrid Limited	\$41,400	Chrysler 300C	\$55,800

<https://www.consumerreports.org/cro/news/2013/02/most-and-least-expensive-cars-to-own/index.htm>



Consider the Whole Life Cost of the Asset

Working on fixing that



Long Term Tunnel Vision







Value: Long Term Thinking

- Singapore Electrical Utility Tunnel
- On-line in 2018
- Designed for 120 years
- Ease of Utility Expansion
- Ease of maintenance: access in the design
- Long Term Cost of Ownership included

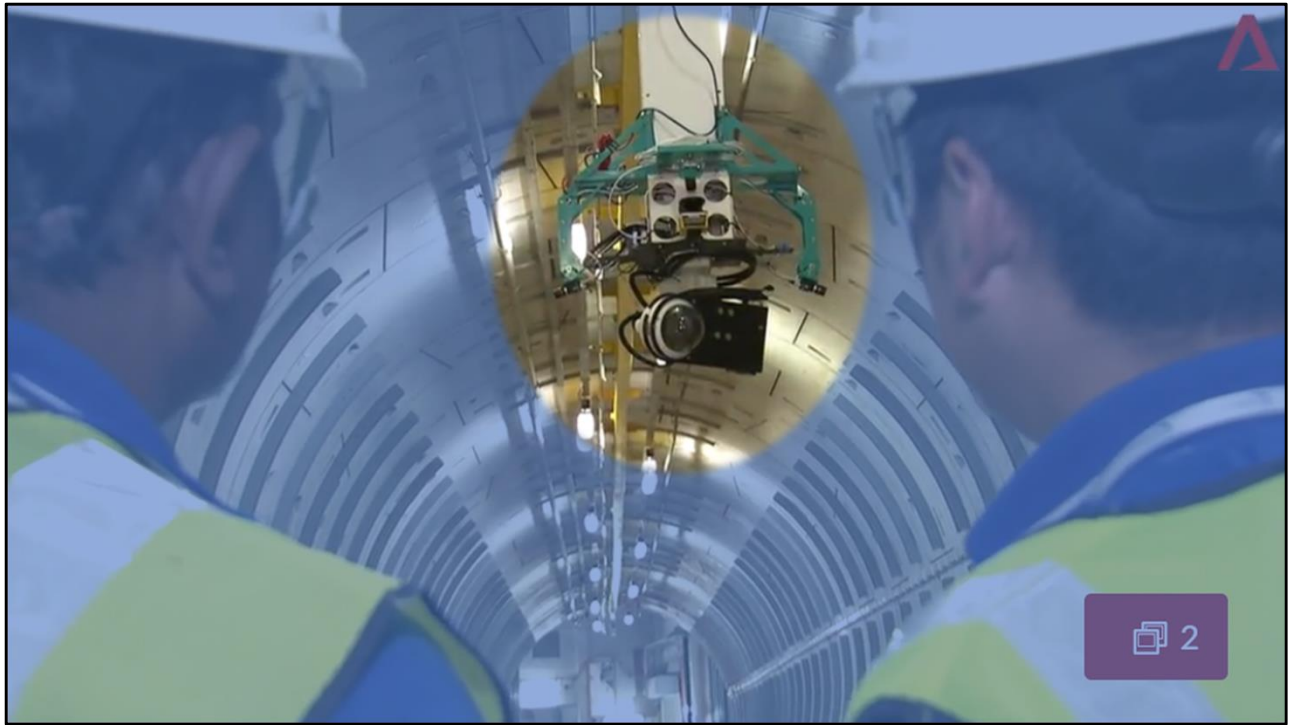


UNDERGROUND TUNNEL SYSTEM



Source: SP Group

Three underground cable tunnels spanning 40km across Singapore will begin transmitting electricity progressively from the end of next year, announced SP Group on Tuesday (Dec 19).







Value-Plus

- Negative Economic Impact Avoidance
 - No Digging up the roads...
- Part of the Value of these Assets





Awareness in Decision Making

- Awareness of decision-making Influences
- Value mindfulness in “Use it or Loose it”
- Apply AM core principles for better results
 - Alignment
 - Understand your assets (FM – Risk)
 - Low-bid vs. whole life cost (Value)
- Consider Cost Avoidance in Value (Value-Plus)





Thank You
Tacoma Zach, P.Eng, CRL
CEO
MentorAPM, LLC
Uberlytics, LLC
480.414.4636
Tacoma.zach@mentorapm.com
Tacoma.zach@uberlytics.com

