

Risk Analysis of District Assets

SCVWD Board of Directors
June 13, 2017



Overview

- ▶ Background
- ▶ Risk Calculation
- ▶ Risk Management (Water Utility Assets)
- ▶ Next Steps

- ▶ EL-6. The BAOs shall protect and adequately maintain corporate assets.
 - ▶ 6.4. Maintain an Asset Management Program
- ▶ Board Policy Planning Calendar:
 - ▶ Update on risk analysis of District assets

Risk Calculation

$$\text{Business Risk Exposure (BRE)} = \text{Probability of Failure (PoF)} \times \text{Consequence of Failure (CoF)}$$

- ▶ Index number ranging from 0 to 150 and used to:
 - ▶ Relatively rank assets by risk – set priorities
 - ▶ Categorize assets as critical, moderate or low risk
 - ▶ Identify appropriate risk management strategy depending on risk category

Risk Calculation – Probability of Failure

- ▶ Measure of asset condition
- ▶ 1-5 scale (1 = new, 5 = failed)
- ▶ Scores vary over time



Risk Calculation – Consequence of Failure

	Impact	None	Very Low	Low	Medium	High	Critical
	CoF Score->	0	1	2	3	4	5
Social (Score 0 to 10)	Service Delivery	No impact	Failure of asset results in short term (< 30 days) , local reduction in service delivery	Failure of asset likely to result in long term (> 30 days) , local reduction in service delivery	Failure of asset likely to result in short term (<30 days) , wide spread reduction in service delivery	Failure of asset likely to result in a long term (> 30 days) , localized total loss in service delivery	Failure of asset likely to result in a long term (> 30 days) , wide spread total loss in service delivery
	Impact to Community Property	No impact/damage	Failure of the asset results in minor, localized damage to community property	Failure of the asset results in minor, wide spread damage to community property	Failure of asset results in major, localized damage to community property	Failure of asset results in major, wide spread damage to community property	Failure of asset results in catastrophic, wide spread damage to community property
Environmental (Score 0 to 10)	Environmental Impacts	No impact	Failure of the asset causes minor environmental damage	Failure of asset likely to cause non-lasting (short term) repairable damage and expect recovery within one year	Failure of asset likely to cause medium-term repairable damage and expect recovery within 3 years	Failure of asset likely to cause long-term repairable damage and recovery requires more than 5 years and may significantly compromise habitat	Failure of the asset likely to cause environmental damage with lasting consequences (permanent change to habitat) and permanent damage to habitat
	Life Safety	No Impact	Failure of the asset could result in minor reportable injuries	Failure of asset could result in significant reportable injuries	Failure of asset could result in short-term disabilities	Failure of asset could result in long-term disabilities	Failure of asset could result in death
Economic (Score 0 to 10)	Financial Impact	No impact	Failure of asset results in <\$10,000 rehab/replacement/penalty cost	Failure of asset results in \$10,000 - \$50,000 rehab/replacement/penalty cost	Failure of asset results in \$50,000 - \$100,000 rehab/replacement/penalty cost	Failure of asset results in \$100,000 - \$500,000 rehab/replacement/penalty cost	Failure of asset results in >\$500,000 rehab/replacement/penalty cost
	Impact to Reputation	No impact	Failure of asset likely to cause minor impact to reputation	Failure of asset likely to cause minor public complaints to District	Failure of asset likely to get attention of Board Members	Failure of asset likely to create negative media coverage	Failure of asset likely to bring criminal charges to District

Risk Calculation – Example

► **PoF = 4**

► Major Renewal Required

► **CoF = 23**

► Service Delivery = 5

► Community Property = 5

► Environmental Impacts = 3

► Public Safety = 1

► Financial Impact = 5

► Impact to Reputation = 4

► **BRE = 92**

Pacheco Conduit Bifurcation 84-inch Butterfly Valve



Water Utility Risk Management

Critical Risk (BRE 61-150)



Accelerate Planned
Rehabilitation or
Replacement



Rehabilitate or
Replace as
Corrective
Maintenance



Modify Operations

Water Utility Risk Management

Moderate Risk (51-60)



Increase preventive maintenance



More frequent condition monitoring

Next Steps

- ▶ Develop risk maps
- ▶ Validate existing and develop risk scores for assets that have not yet been assessed
- ▶ Update BRE score thresholds for critical, moderate, and low risk categories