



WICHITA STATE  
UNIVERSITY

HUGO WALL SCHOOL  
OF PUBLIC AFFAIRS

*Environmental Finance Center*



# FINANCIAL WINS FROM UTILITY ASSET MANAGEMENT

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# Our Services



applied research



professional training



technical assistance



**Melissa**  
interim director



**Nick**  
program manager



**Tonya**  
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**Leslie**  
marketing/events



**Jerry**  
project associate



**Brian**  
program manager

# AREAS OF EXPERTISE



Asset Management



Rate Setting and Fiscal Planning



Communication and Decision-Making Strategies



Water Loss Control



Controlling Energy Costs



Accessing Infrastructure Financing Programs



Workforce Development



Water Conservation Finance and Management



Collaborating with Other Water Systems



Resiliency Planning



Managing Drought

# KANSAS WATER RATE CHECK UP TOOL

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- ▶ [www.kansasratecheckup.org](http://www.kansasratecheckup.org)
- ▶ Visit Kansas Municipal Utilities web site for training opportunities.
- ▶ Sustainability tool for financing utility infrastructure-  
Contact WSU EFC

# ASSET MANAGEMENT OVERVIEW

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## ► Five Core Components

### ► Inventory & Condition

- What, where, how much?

### ► Level of Service

- What assets do, customer service?

### ► Criticality

- Risk – probability X consequences

### ► Lifecycle Costing

- All costs, acquisition, O&M, rebuilds, disposal

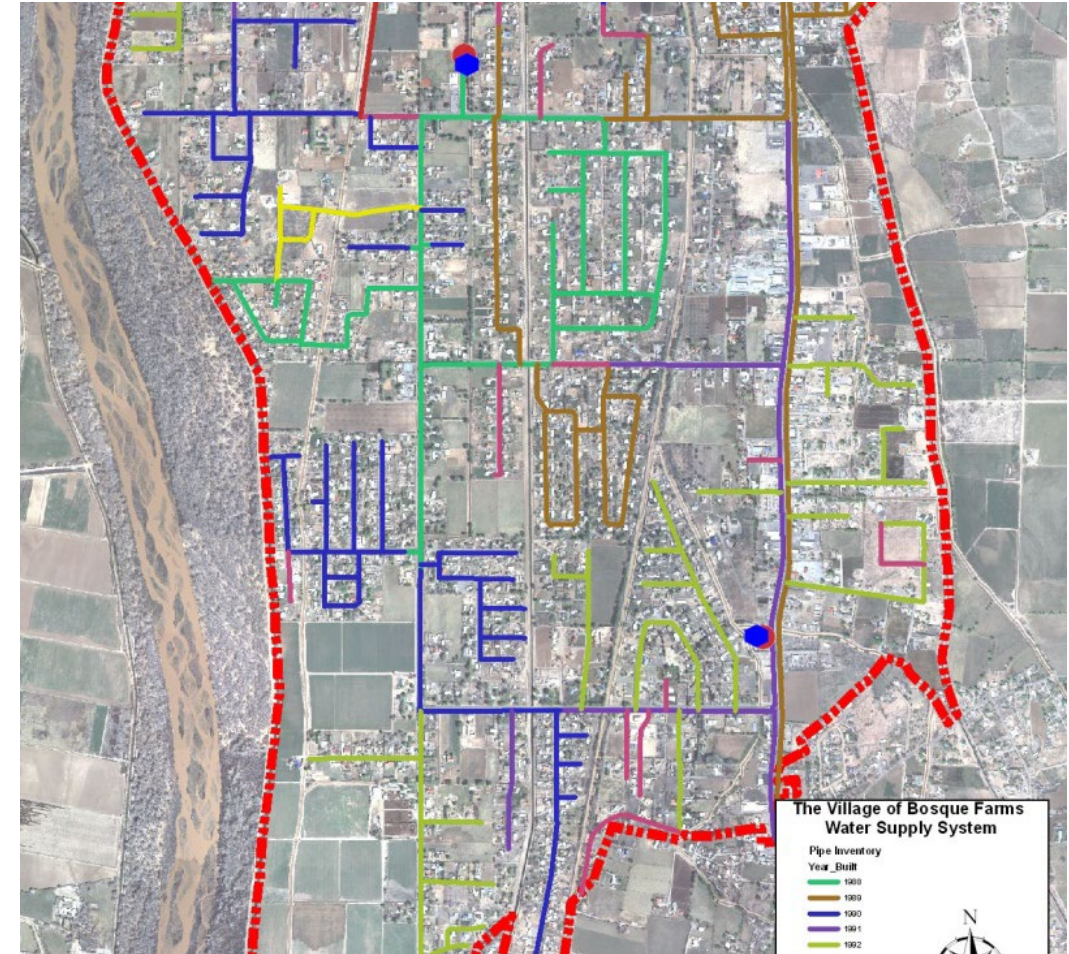
### ► Long-term Funding

- Functional budgets, Capital Improvement Plans, cash/debt financing



# INVENTORY & CONDITION ASSESSMENT

- ▶ What does utility own?
- ▶ Where is it?
- ▶ What will it cost to replace/rehab?



# Photos from City of Topeka Utilities Department's post

in Timeline Photos



**True**  
OR  
**False**

Large brick storm sewer installed  
in Topeka in the 1880's

Like Comment Share

Options Send in Messenger

\*Image Source: Impact of Water on the Development of Topeka



City of Topeka Utilities Department

July 31

In regards to yesterday's True or False question, the answer is TRUE! The City of Topeka Utilities Department has approximately 29,730 linear feet of BRICK sanitary sewer still in use today. There are segments of this brick sewer that have installation dates that range from 1892-1924. Pictured is a brick storm sewer that was constructed in 1880. The largest of these brick sewers were 5-7 feet in height.

We hope you enjoyed playing along and gained some fun Topeka history. Make sure to like our page so that you can get notified when we post more True or False questions!

You and 29 others 1 Comment 4 Shares

Like Comment Share

Most Relevant

**Karl Fundenberger** I'm pretty sure this old line is the reason my toilet is haunted

Like · Reply · 8w

2

Write a comment...





# INVENTORY & CONDITION ASSESSMENT WINS

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- ▶ Reduction of liabilities
  - ▶ Sewer camera identifies future backup cause
    - ▶ City can better fight damage claims for sewer backups with data
  - ▶ Water valve assessment identifies non-functioning valves
    - ▶ City replaces – in event of water main break 12 customers lose service instead of 80



# INVENTORY & CONDITION ASSESSMENT WINS

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- ▶ Analysis of main breaks shows most are limited to:
  - ▶ Acid soils
  - ▶ Near truck routes
  - ▶ Little correlation with age
- ▶ Inspection reveals limited repair needed – not full replacement
  - ▶ Sewer mains
    - ▶ Mainly camera
  - ▶ Large diameter water mains
    - ▶ Various newer technologies
      - ▶ WaterOne is testing



# CRITICALITY

- ▶ Some utility assets are riskier than others
- ▶ Largest risk may be to customers or society – not utility
  - ▶ Emporia main break 2017
    - ▶ 20 inch main
  - ▶ Boil orders in town & purchasing systems (12 total)
  - ▶ Businesses close
    - ▶ Obvious ones – car washes, laundromats
    - ▶ Less obvious – manufacturing sends shift home
    - ▶ Emporia State closed
    - ▶ Child care closed
    - ▶ Tyson sends workers home
    - ▶ Restaurants closed
    - ▶ Elective surgeries rescheduled
    - ▶ Hospital hauls water for cooling towers

THE EMPORIA GAZETTE

80  
°C

News Sports Obituaries Opinion Community Area News Multimedia E-Paper Magazines

**Jack's** "We're more than a Pool Store"  
Lawn & Pool Store 829 Commercial St.  
Emporia Your Platinum BioGuard Dealer  
620-208-7660

FEATURED

## Water main break causes city-wide outage

The Emporia Gazette Jul 20, 2017 4



Regina Murphy/Gazette

Buy Now

f t e b

Most Emporians woke up to an unpleasant surprise today: no water. According to a city individual at the after-hours number a break at 15th and Prairie has reduced or eliminated water pressure through "most

# CRITICALITY

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- ▶ Risk = probability X consequences
- ▶ Probability = judgement call, past experience, other's experience, maintenance, rebuilds, etc.
- ▶ Consequences = direct costs to utility, risks of costs to utility through non-compliance, costs to the public at large and specific customers



# Clinton mayor arrested for 3rd time, now over town's water; her attorney denies any crime

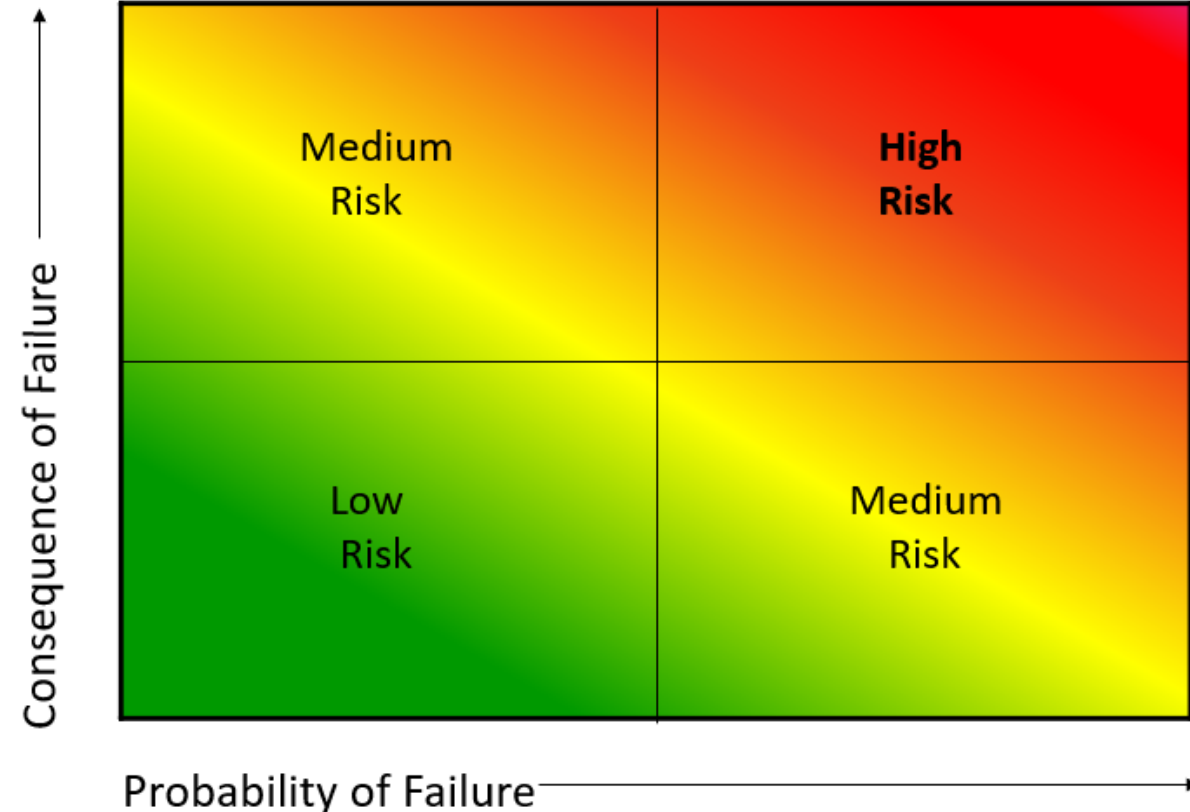
BY GRACE TOOHEY and EMMA KENNEDY | [gtoohey@theadvocate.com](mailto:gtoohey@theadvocate.com) and [ekennedy@theadvocate.com](mailto:ekennedy@theadvocate.com) JAN 9, 2019 - 6:29 PM 4 min to read



# CRITICALITY IN PRACTICE

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- ▶ Ranking asset criticality
  - ▶ Long-term cost savings
  - ▶ Long-term risk reduction
- ▶ Ranking assets allows for:
  - ▶ Prioritization in CIP
  - ▶ Change in maintenance
  - ▶ Changes in operation



# CRITICALITY – FINANCIAL WINS

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- ▶ Optimizing outsourcing
  - ▶ Are your skilled operators driving mowers around?
  - ▶ Can their time and skills spent mowing lead to greater maintenance, reliability and lower risk?
  
- ▶ Optimization of valve exercising
  - ▶ Ensure critical valves operate by more frequent exercising/maintenance
  - ▶ Less risky valves exercised less frequently
  
- ▶ Optimization of sewer cleaning
  - ▶ Utilities moving away from 1/4<sup>th</sup> of town to risk-based cleaning/camera work
  - ▶ New residential lines unlikely to have problems
  - ▶ Visit likely/known problem areas more frequently

# LIFECYCLE COSTING

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## ▶ Operate assets at lowest lifecycle costs

- ▶ Acquisition
- ▶ Operation & Maintenance
- ▶ Repairs
- ▶ Rebuilds and Rehabilitation
- ▶ Disposal/sale

**About 90% of an electric motor's lifecycle cost is electricity**

## ▶ Requires:

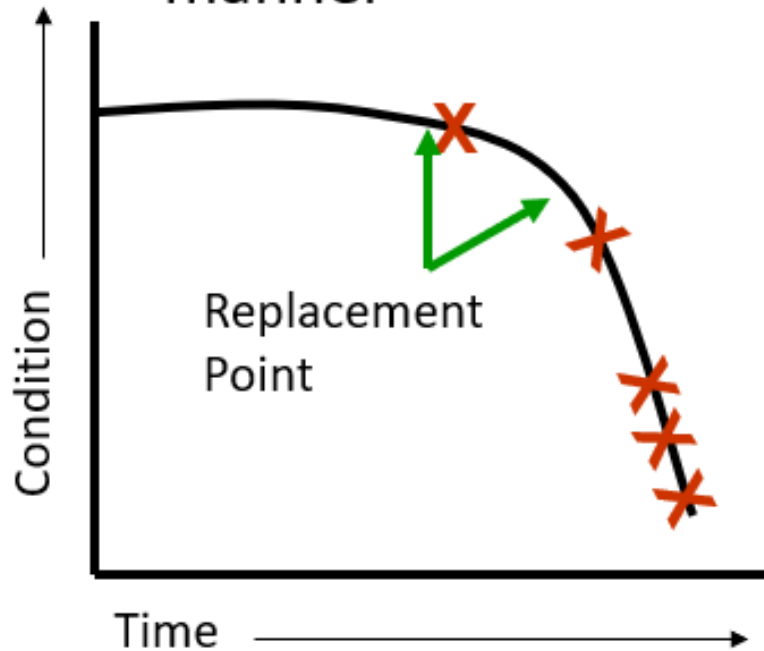
- ▶ Attempt to calculate lifecycle costs
- ▶ Willingness to (maybe) throw out low-bid sourcing
- ▶ Willingness to operate in grey areas of accounting
  - ▶ Is it maintenance or capital expense?
    - ▶ i.e. cement manhole lining, cured-in-place sewer pipe, metal refinishing at treatment plant



# LIFECYCLE – BETTER TIMED REPLACEMENTS

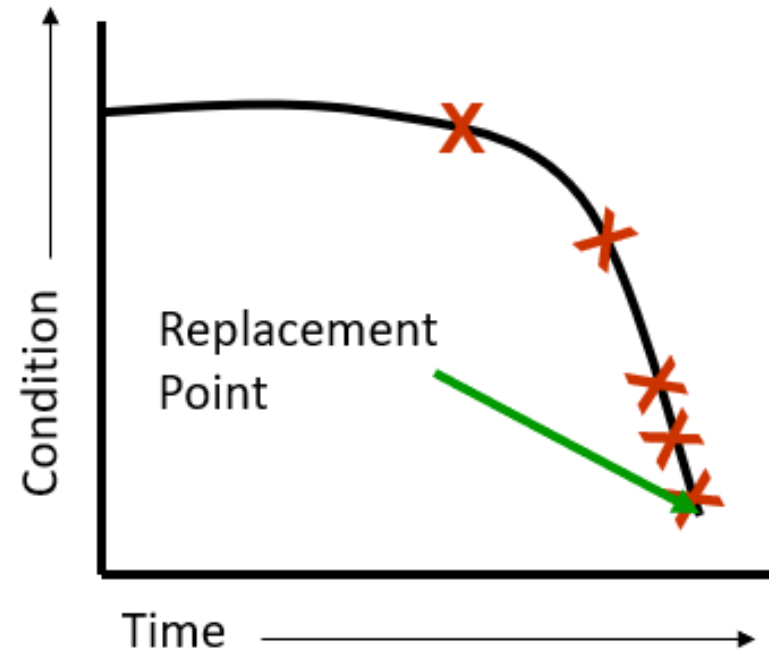
High risk assets: err on the side of replacing too soon, before failure

- Replaced in a planned manner



Low risk assets: allow them to run to failure and replace afterwards

- Managed failures



# LIFECYCLE COSTING – BEST BETS

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- ▶ Sensors & controls for wastewater plants
  - ▶ Better treatment quality, significant reduction in electric consumption
- ▶ Variable frequency drives on water & wastewater pumps
  - ▶ Minimize pipe breaks through “soft start”
  - ▶ Significant reduction in electrical consumption
  - ▶ Better wastewater treatment
- ▶ Lining of sanitary sewer pipe
  - ▶ 1/10<sup>th</sup> to 1/5<sup>th</sup> the cost, 40-50 year life, little disruption, reduce excess flows
- ▶ Manhole rehabilitation
  - ▶ Half to greater life expectancy – 1/3 to 1/2 cost, little disruption, reduce sewer flows
- ▶ Painting of steel tanks



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