Town of Addison Infrastructure Asset Management Story

Asset Management Project: Progress Update

March 6, 2018

Order of Presentation

- Asset Management Objectives

- Project Approach
  - Data Collection Methodology
  - Asset Management Analytics
  - Level of Service Consideration in AMP
  - Asset Management Tool Demo

- Project Outcome / Deliverable
  - IRIS
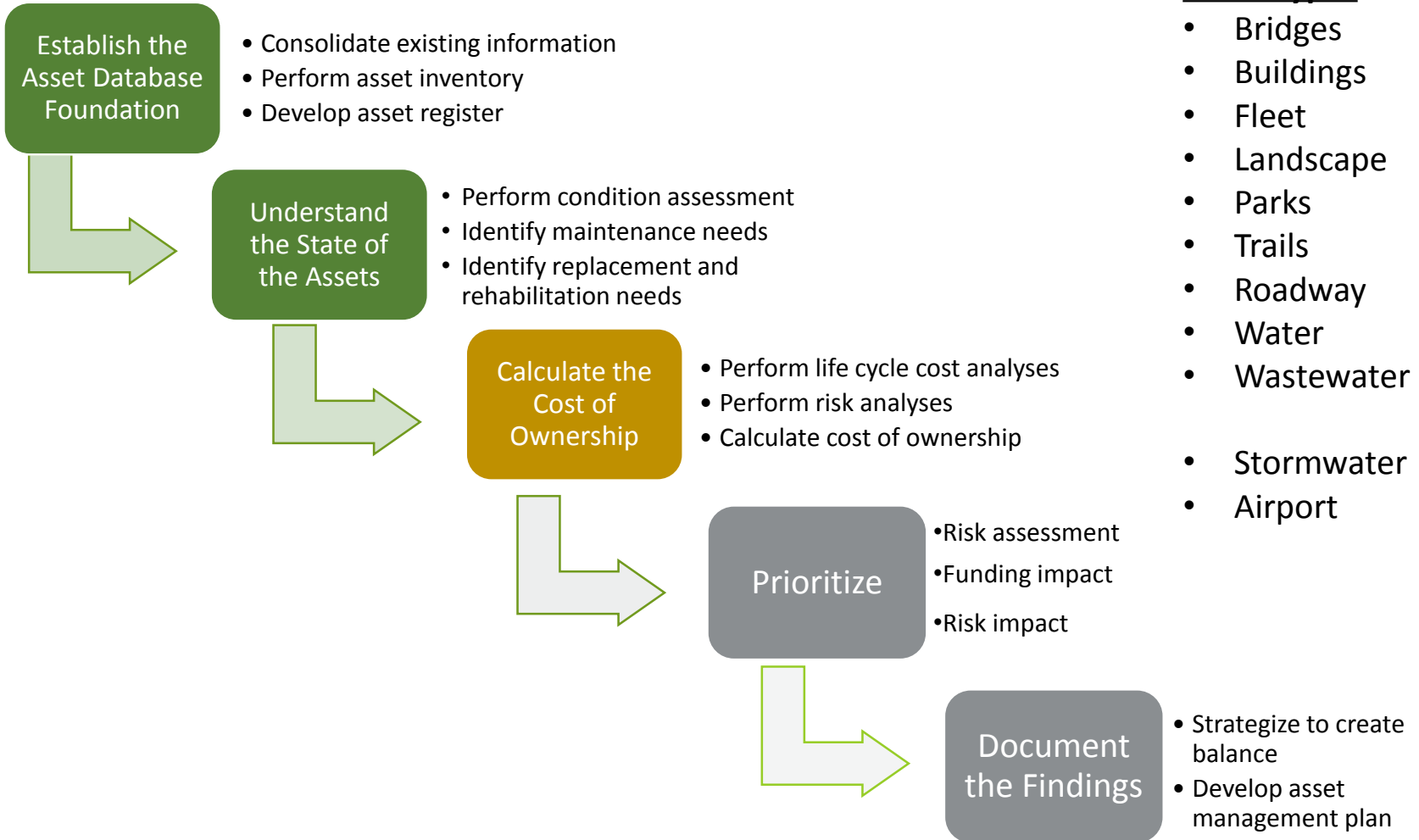 - Asset Management Plans

- Q&A

Project Objectives

- Consolidate asset knowledge

- Develop an asset database foundation

- Understand current state and future asset needs

- Assess risk and prioritize needs based on risk

- Develop strategy to balance cost, service, and risk

- Transition from reactive to proactive state of practice

- Provide a logical, transparent, and defendable decision-making platform

Tell a Good Asset Management Story!

Work Process

Establish the Asset Database Foundation
- Consolidate existing information
- Perform asset inventory
- Develop asset register

Understand the State of the Assets
- Perform condition assessment
- Identify maintenance needs
- Identify replacement and rehabilitation needs

Calculate the Cost of Ownership
- Perform life cycle cost analyses
- Perform risk analyses
- Calculate cost of ownership

Prioritize
- Risk assessment
- Funding impact
- Risk impact

Document the Findings
- Strategize to create balance
- Develop asset management plan

Asset Types
- Bridges
- Buildings
- Fleet
- Landscape
- Parks
- Trails
- Roadway
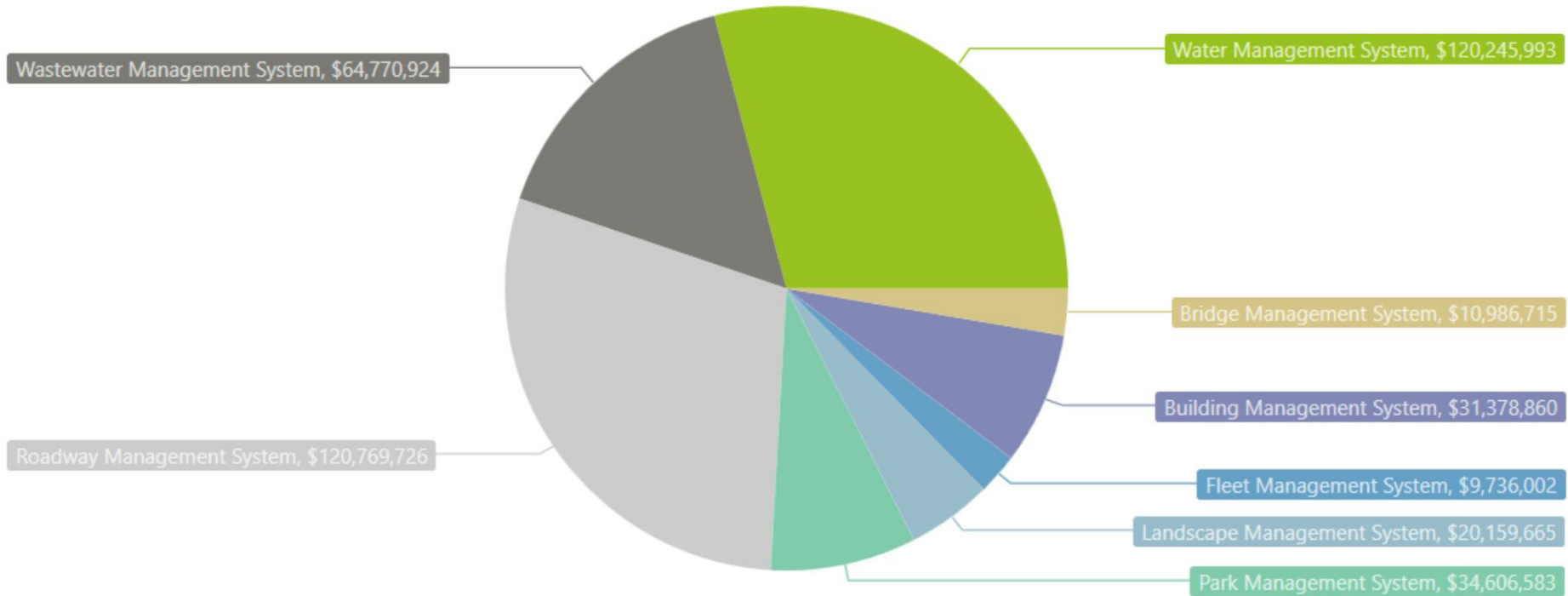- Water
- Wastewater
- Stormwater
- Airport

Big Data is Coming!

- Building the asset data foundation
  - To date: 37,529 assets
    - Bridges – 419 assets
    - Buildings – 7,379 assets
    - Fleet – 182 assets
    - Landscape – 2,421 assets
    - Park – 3,993 assets
    - Roadway – 7,488 assets
    - Wastewater – 3,518 assets
    - Water – 12,129 assets
  - Next Phase
    - Storm drains
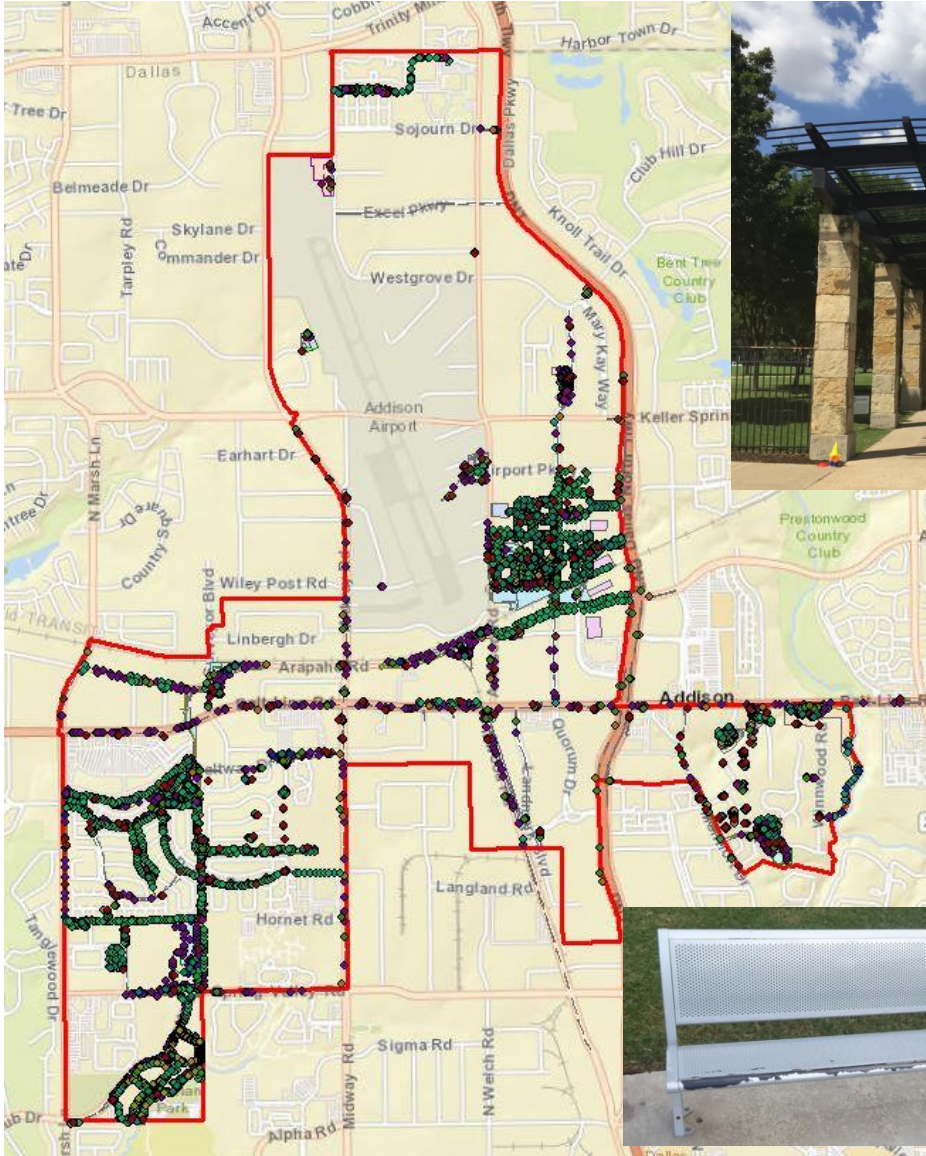   - Airport
    - CMMS

Summation of Replacement Costs

- 37,529 assets → ~$450 million
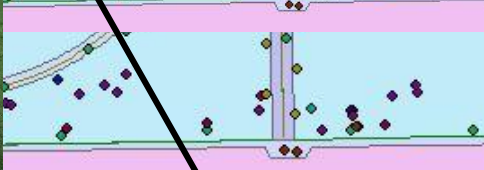

Wastewater Management System, $64,770,924

Water Management System, $120,245,993

Bridge Management System, $10,986,715

Building Management System, $31,378,860

Roadway Management System, $120,769,726

Fleet Management System, $9,736,002

Landscape Management System, $20,159,665

Park Management System, $34,606,583

Park Assets

• 3,993 assets

Addison Circle Park Assets

- 688 assets → $5.5 million

Park Asset Inventory

- 3,993 park assets

Park	Assets	Park	Assets
Addison Circle	688	North Addison	144
Addison Town	109	Parkview	95
Arapaho	140	Quorum	197
Beckert	133	Redding Trail	565
Beltway Sam's	42	Redding Trail Dog Park	99
Blueprint	77	Spruill	168
Bosque	126	Vitruvian	553
Celestial	161	White Rock Creek Trail	100
Community Garden	85	Winnwood	100
Les Lac Linear	411		

Signage

- To date: 1,763 signs
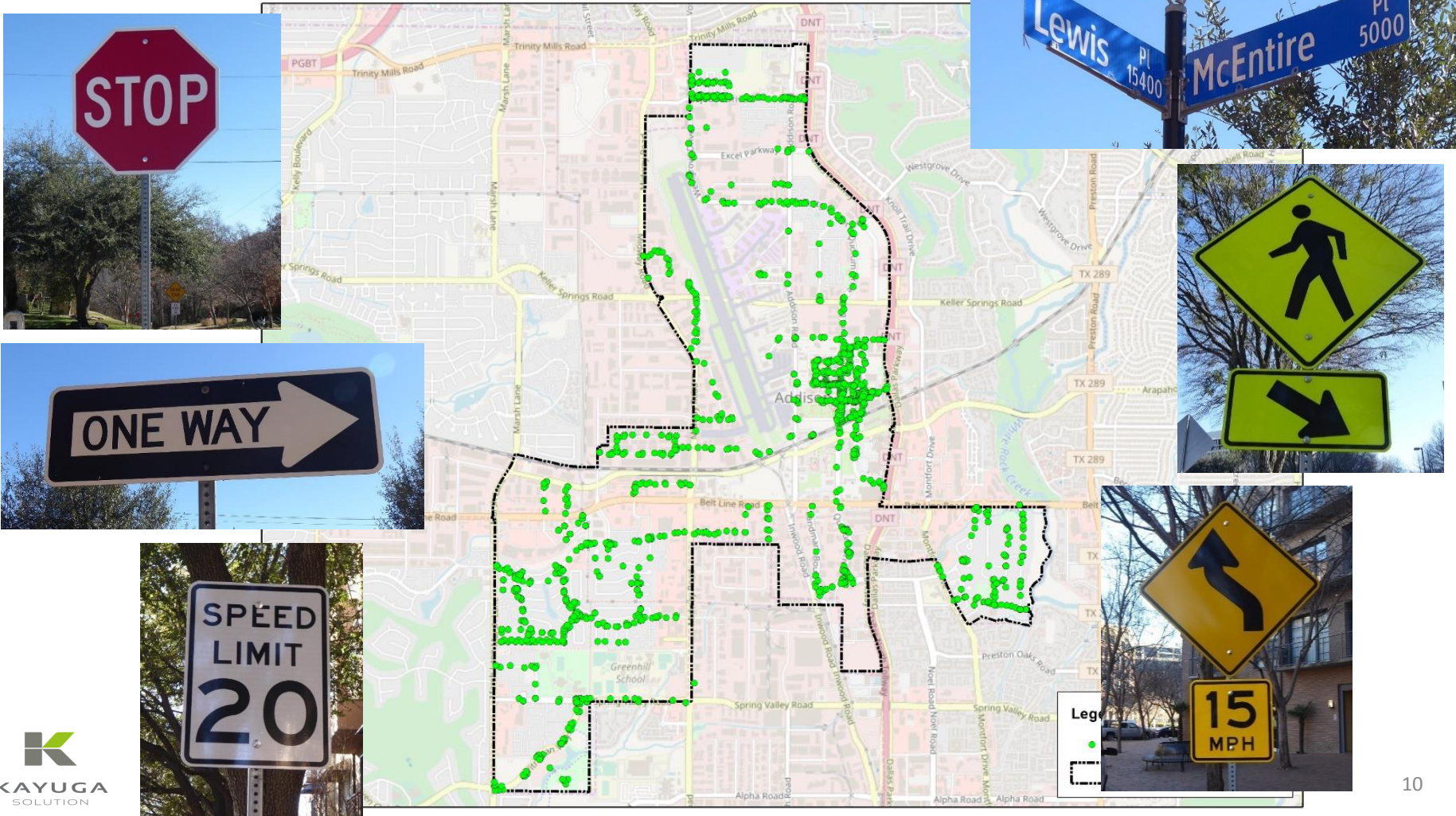
Celestial Pump Station Pump Assembly

Suction Isolation Valve (In Vault)

Pump #3

Motor #3

Vibration Switch

Discharge Air Release Valve

Discharge Air Release Isolation Valve

Discharge Air Release Check Valve

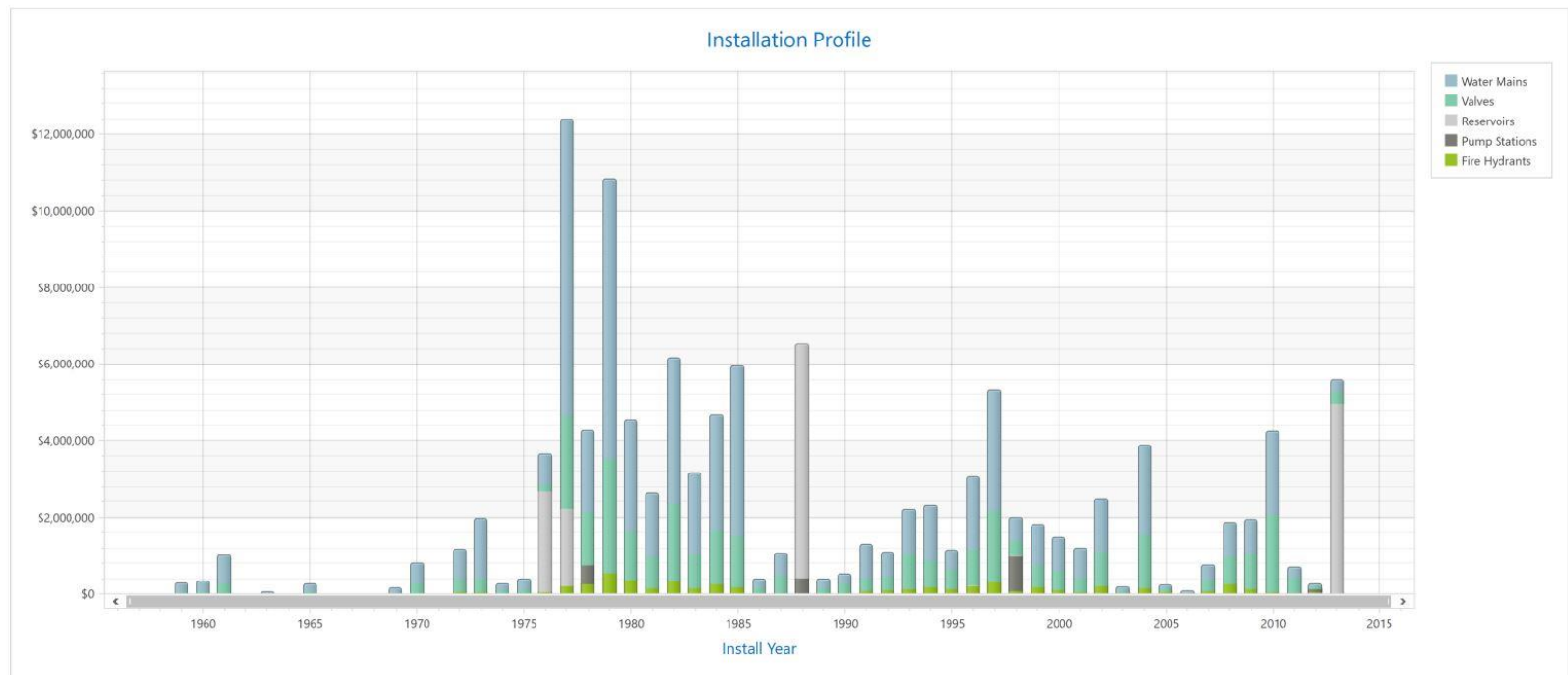Motorized Discharge Isolation Valve

Motorized Discharge Isolation Valve Actuator

But Assets are Aging

- We have assets that are over 50 years old
- We have assets in that are in need of replacement
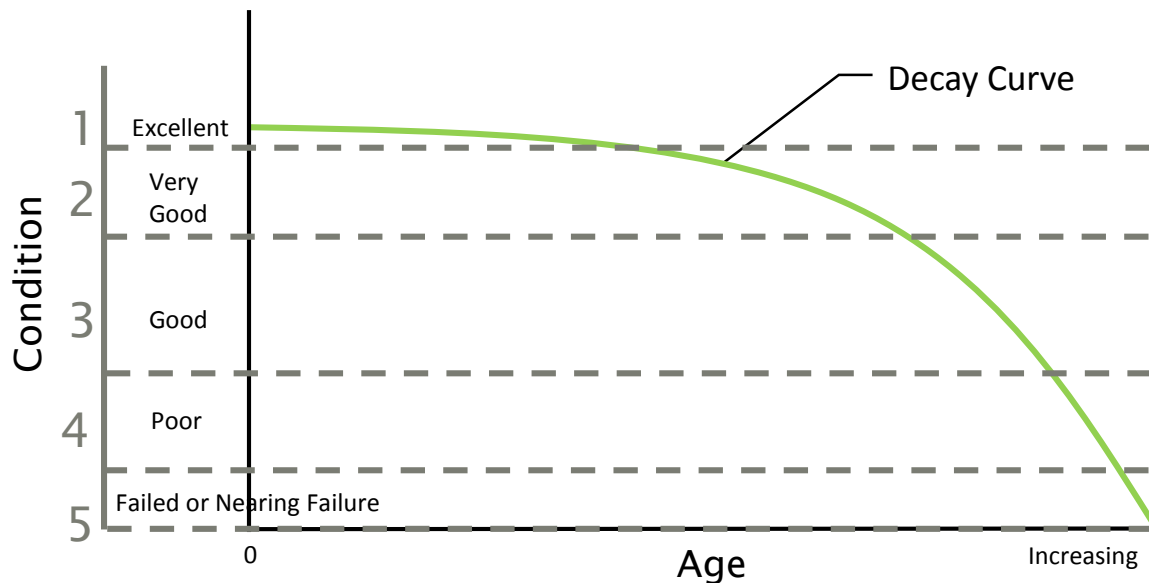
Water Management System

Using Condition as Indicator for Replacement Timing

Scale	Description
1	New or nearly new condition
2	Very good condition or better than expected
3	Good or as expected condition
4	Poor or recommended replacement within 2 years
5	Failed or nearing failure, need immediate attention

Decay Curve

Condition

1 Excellent

2 Very Good

3 Good

4 Poor

5 Failed or Nearing Failure

Age   Increasing

Signs in Poor Condition

Legend

- Collected Field Visit Signs
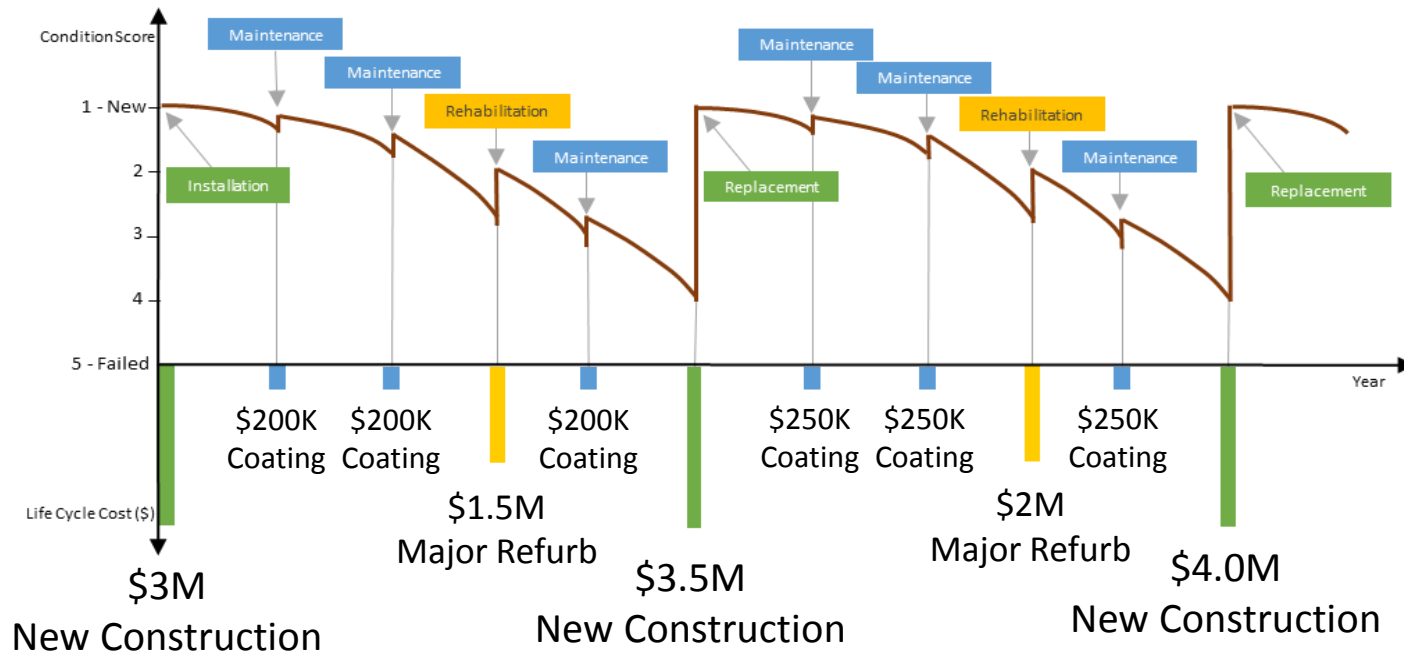- Collected Field Visit Signs (Condition Ranked 4 or 5)
- Addison City Limits

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Poor Condition Assets - Buildings

Calculating the Cost of Ownership

- Water Tower Life Cycle Cost Example

Future Needs

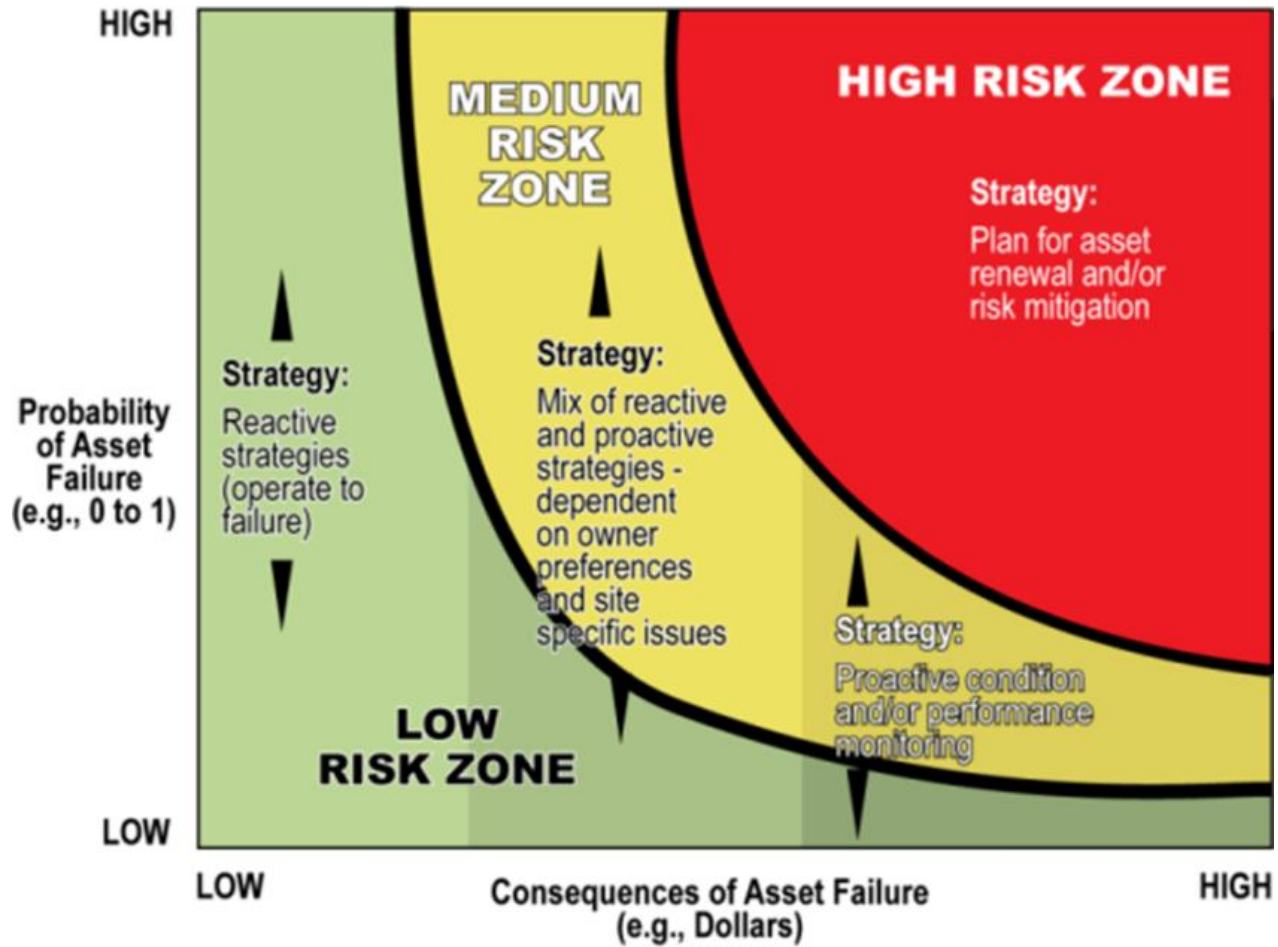Replacement & Rehabilitation (R&R)

Legend:
- — Annual Average
- Bridge Management System
- Building Management System
- Fleet Management System
- Landscape Management System
- Park Management System
- Roadway Management System
- Wastewater Management System
- Water Management System

$20,000,000

$8,044,468

$0

2020   2025   2030   2035   2040   2045

Year
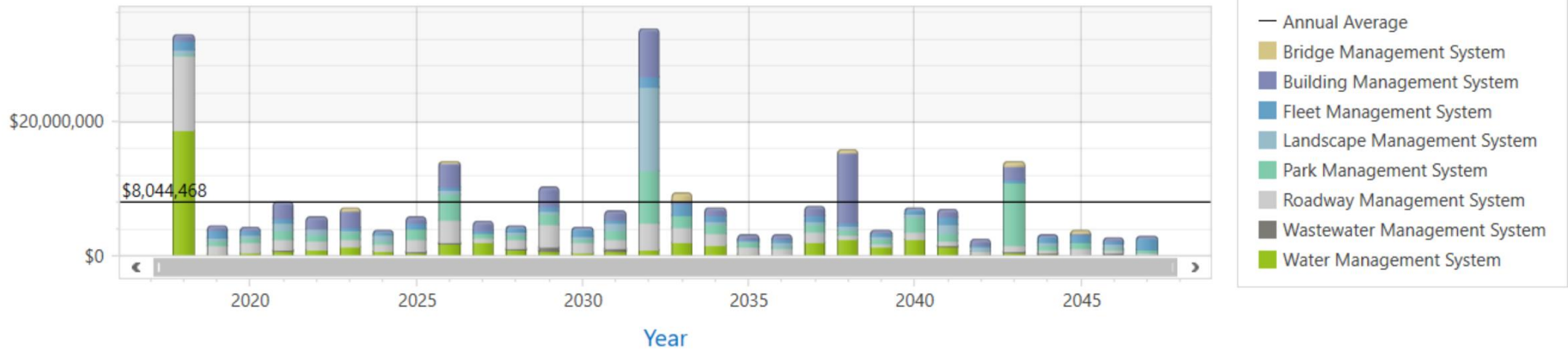
Use the Concept of Risk to Prioritize

Park/Trail Criticality

Park Name	Usage
Addison Circle Park	High
Spruill Park	High
Vitruvian Park	High
Beckert Park	High
Blueprints at Addison Circle	High
Bosque Park	Medium
Celestial Park	Medium
Les Lacs Linear Park	Medium
Parkview Park	Medium
Quorum Park	Medium
Winnwood Park	Medium
Redding Trail	Medium
Addison Town Park	Low
Arapaho Park	Low
North Addison Park	Low
Beltway Sam's Park	Low
Community Garden	Low
Redding Trail Dog Park	Low
White Rock Creek Trail	Low

Asset Level Criticality

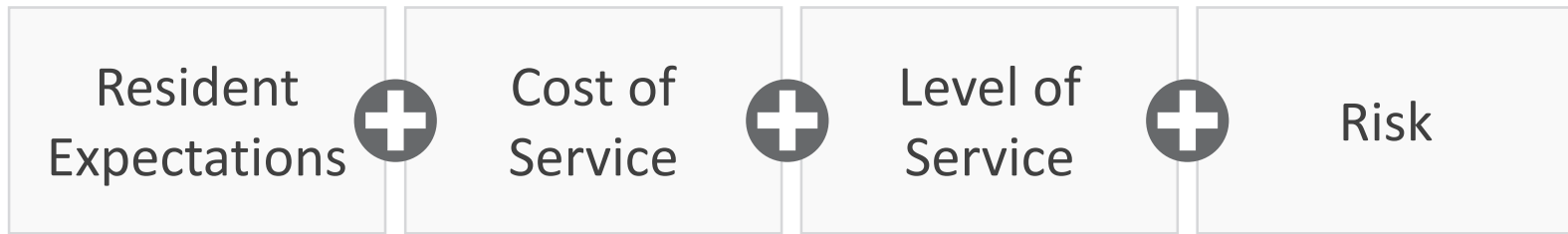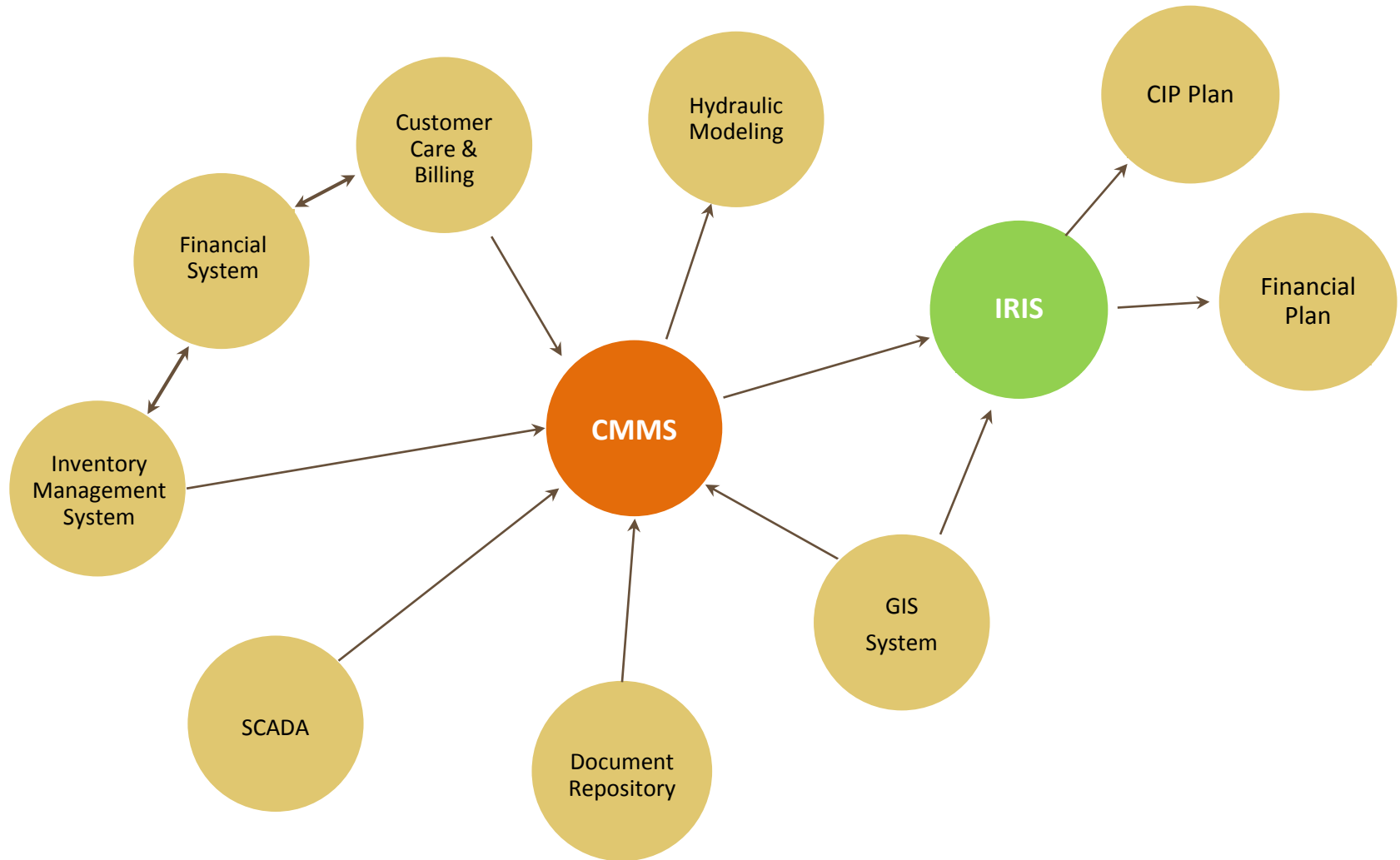| Criticality – 5	Criticality - 4	Criticality - 3	Criticality - 2	Criticality - 1
Critical	←		→	Non-Essential
• Play Structure • Playground Surfacing • Walkway • Handrail • Etc.	• Irrigation Controller • Shelters • Stairways • Lighting • Etc.	• Bench • Drinking Fountain • Picnic Table • Etc.	• Fencing • Bike Rack • Trash Bin • Etc.	• Information Board • Etc.

Park Management System Risk Profile

Risk matrix with Probability of Failure (vertical axis) and Consequence of Failure (horizontal axis):

Probability of Failure	Consequence 1	Consequence 2	Consequence 3	Consequence 4	Consequence 5
1	$14,750 / 1	$15,750 / 20	$14,500 / 27	$54,250 / 67	$5,500 / 2
0.8	$229,304 / 44	$5,591,292 / 580	$2,848,958 / 1083	$4,577,648 / 788	$8,441,942 / 454
0.6	$0 / 0	$0 / 0	$0 / 0	$0 / 0	$0 / 0
0.4	$3,000 / 1	$290,488 / 85	$1,013,798 / 269	$1,064,555 / 238	$9,826,133 / 241
0.2	$0 / 19	$31,946 / 2	$360,719 / 32	$212,150 / 31	$9,900 / 9

Level of Service vs. Asset Management Plan

- Achieving balance

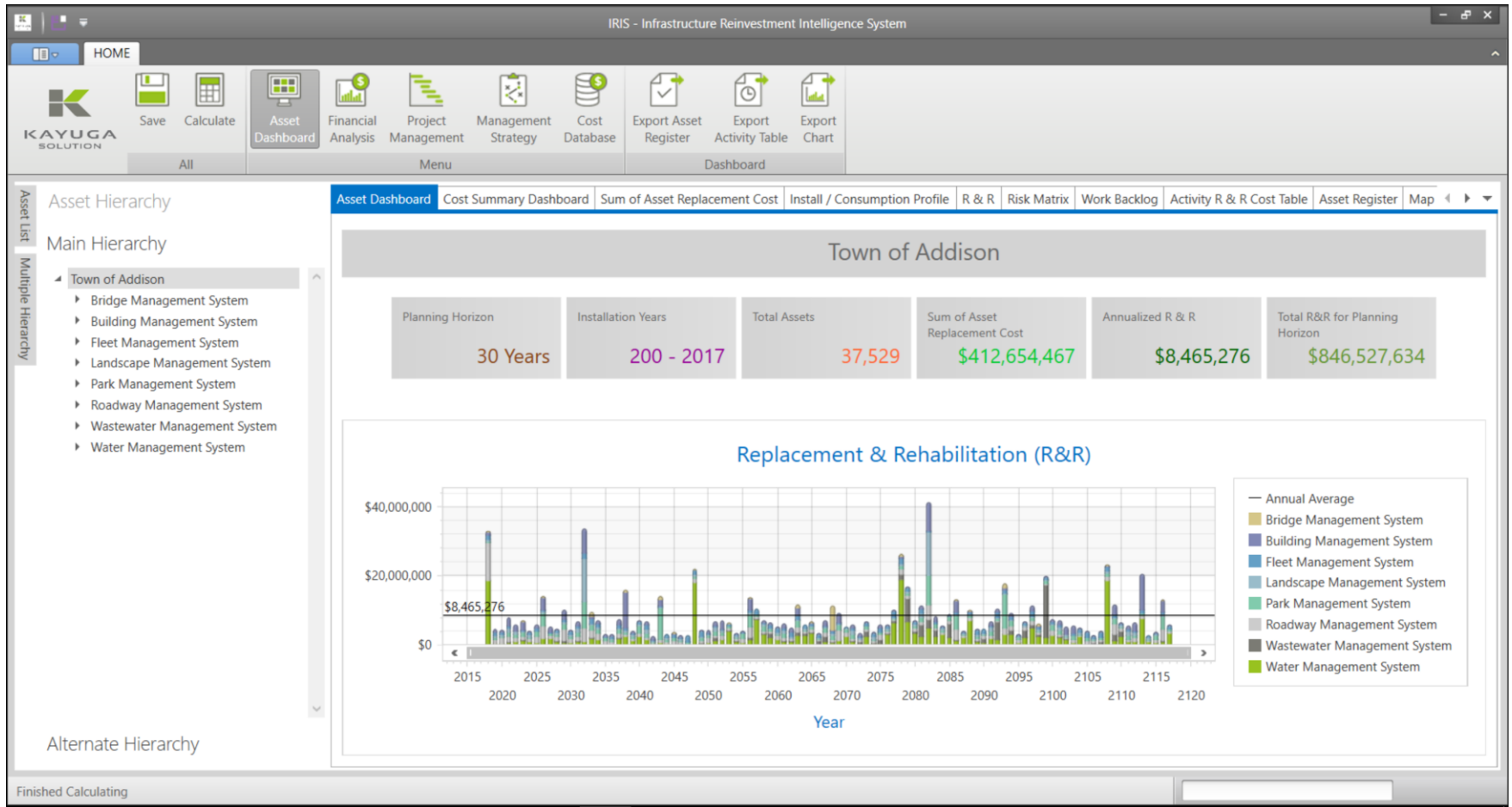| Resident Expectations		Cost of Service		Level of Service		Risk
	➕		➕		➕	

Asset Management Information System

IRIS Demonstration

Thank you!