



KERR WOOD LEIDAL  
consulting engineers

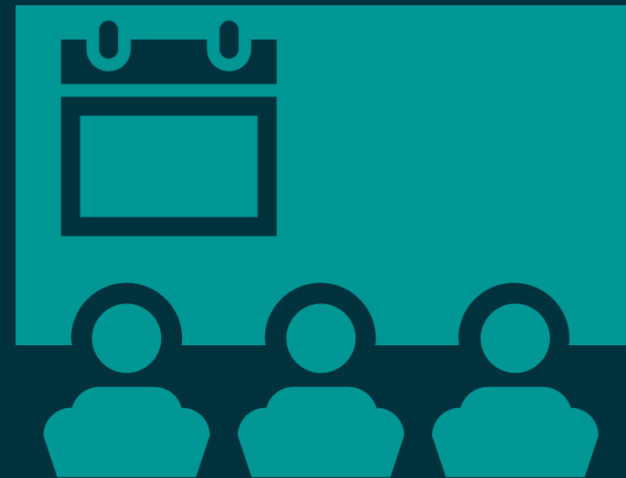
# Lifecycle Analysis

Asset Management Lifecycle Planning  
Workbooks

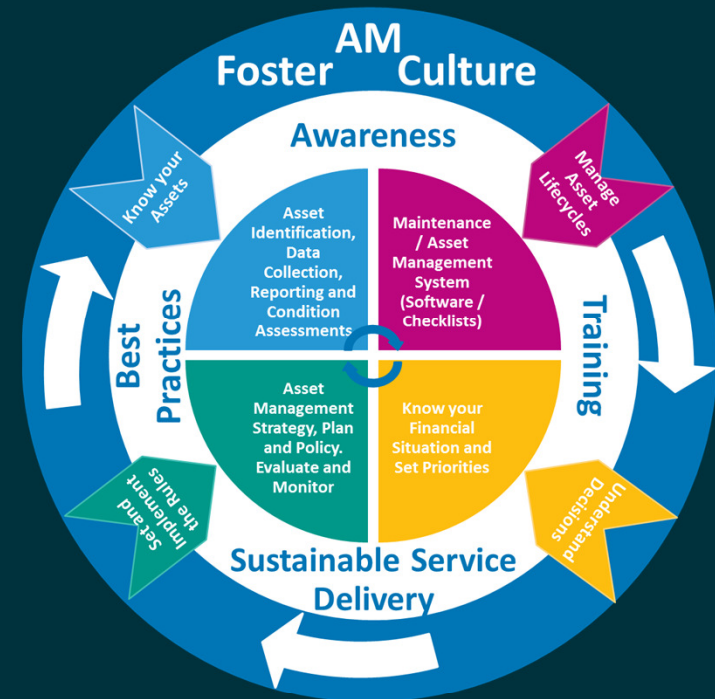
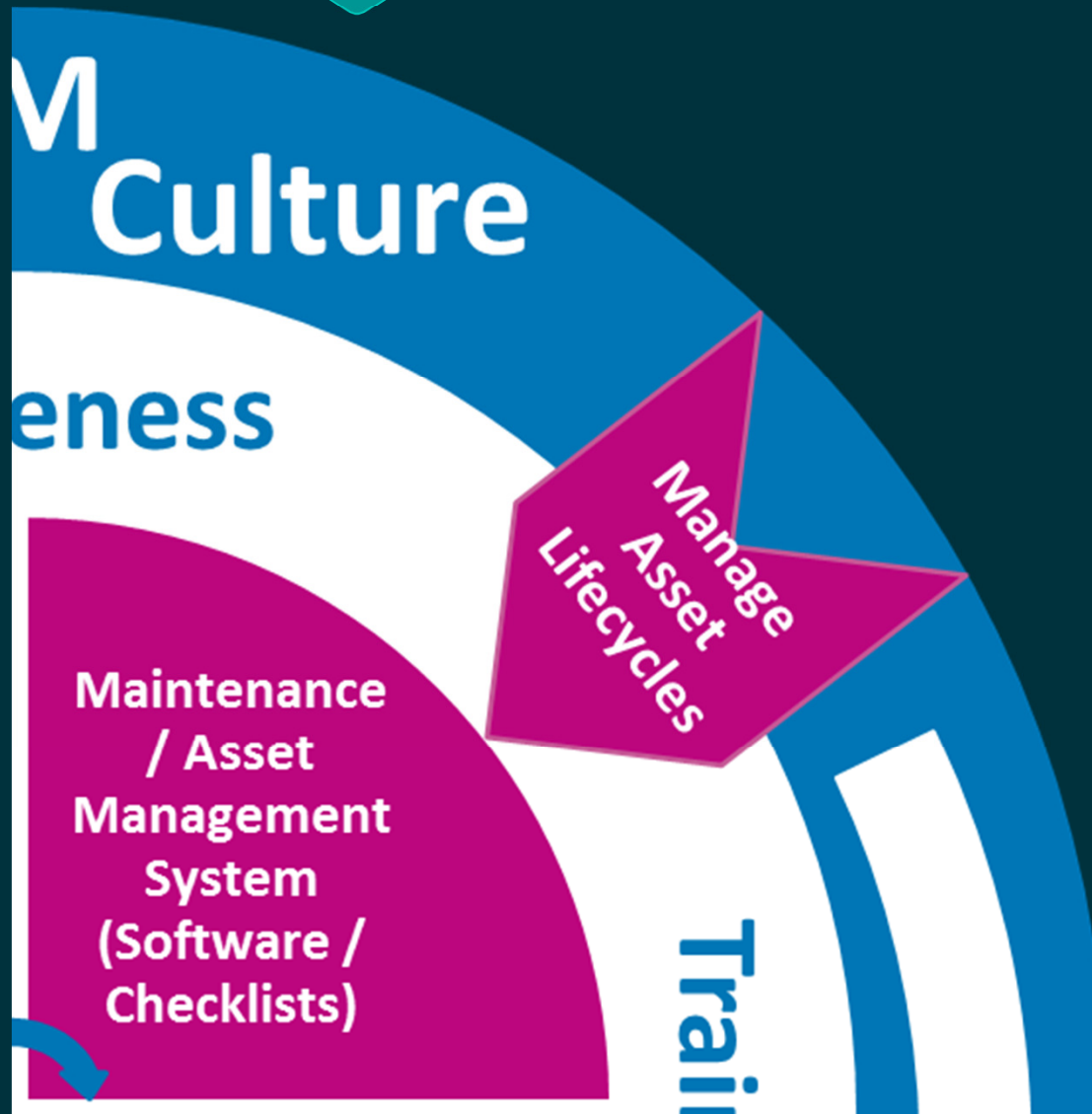
Friday, May 25 @ 10:45am

# Agenda

- Overview of Lifecycle Costing
- Buildings Workbook
- Equipment and Vehicles Workbook
- Pools Overview
- Arenas Overview
- Next Steps
  - Case Studies / Information Request
  - Questions / Feedback



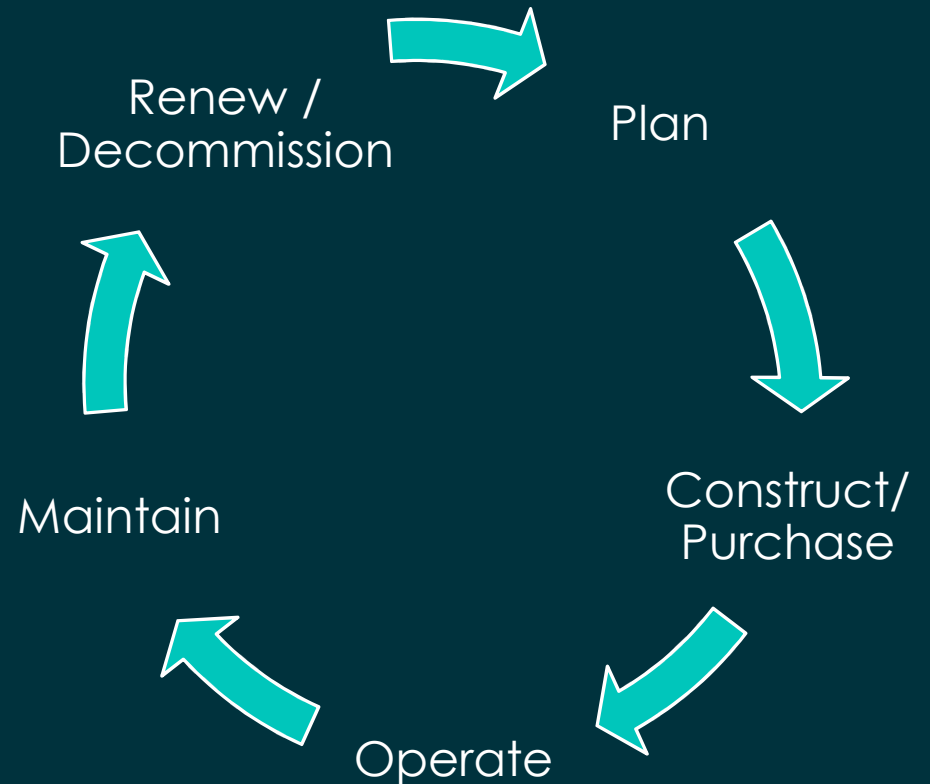
# Asset Management Framework



# Overview of Lifecycle Costs

## What are Lifecycle Costs?

True costs involved in **owning and utilizing** a community asset over its useful life.



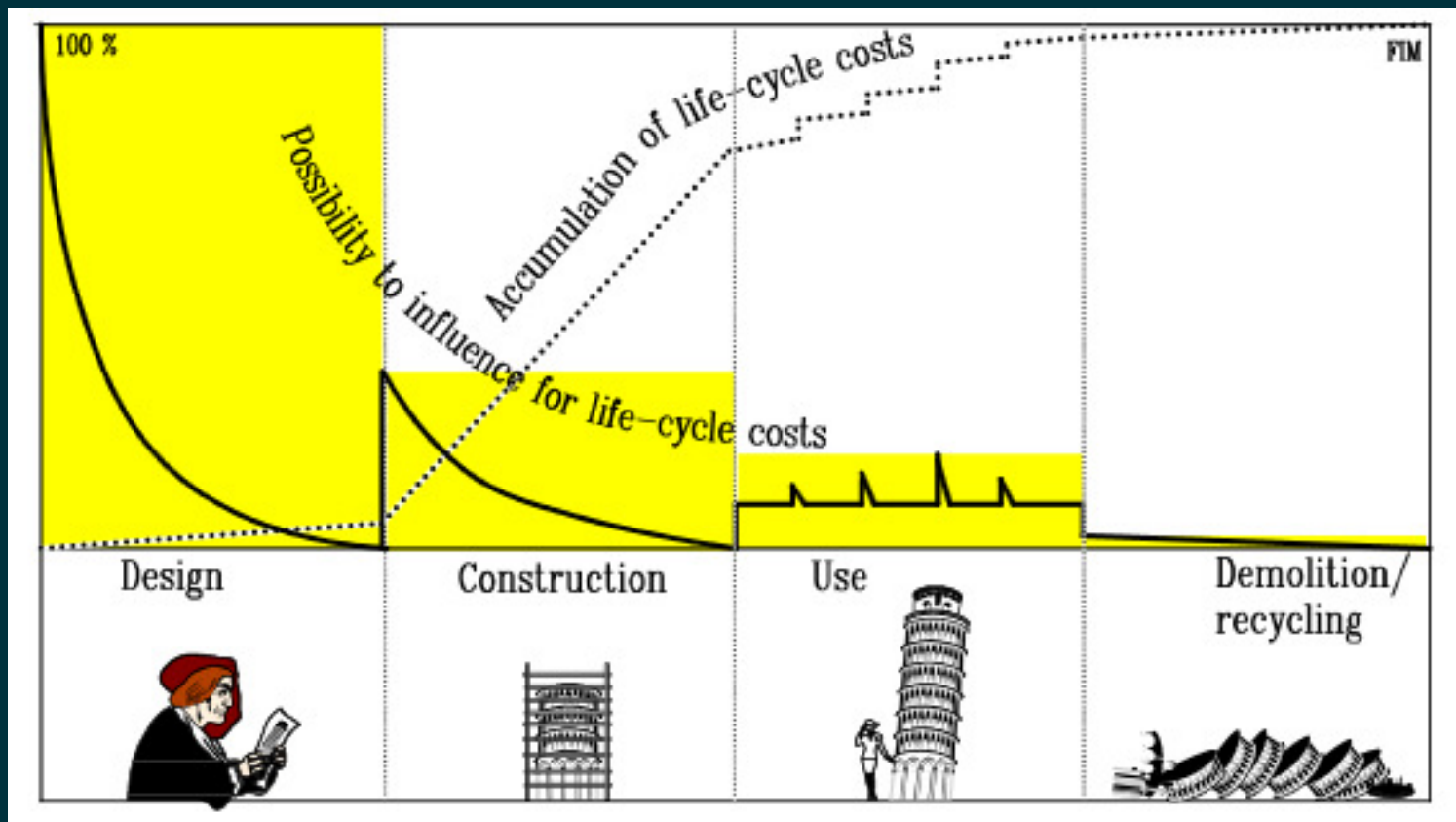
# Overview of Lifecycle Costs

## Why is this important?

- Supports an **assessment** of infrastructure **strategically over its life**
- Enables **fact-based decisions** regarding a **best value** approach for providing services
- Helps **understand and compare projects**, even when they may have markedly different initial capital costs
- Presents **consistent and transparent processes**

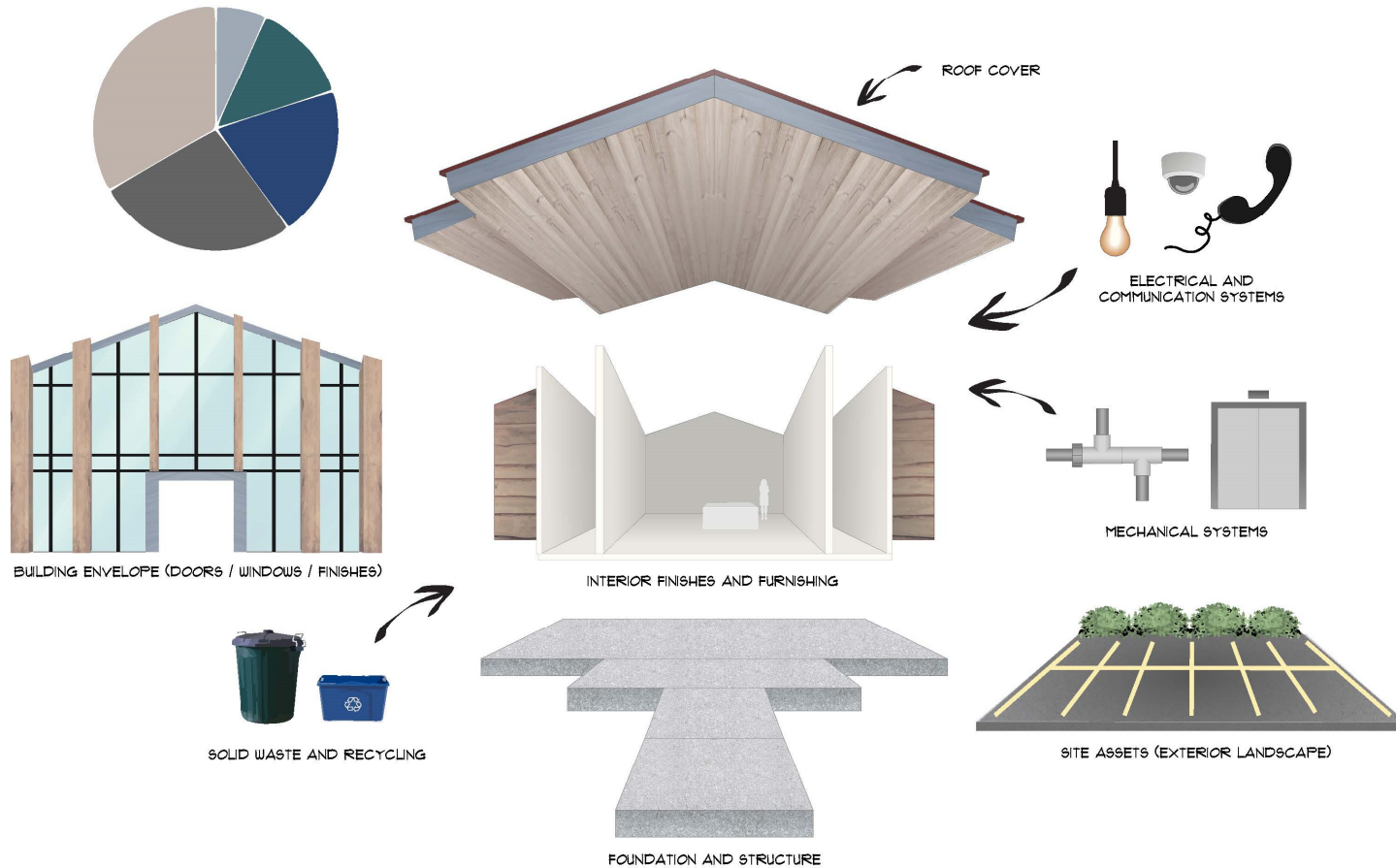
# Overview of Lifecycle Costs

## Sphere of Influence



Source: Life-Cycle Cost Design Methods and Tools (S. Pulakka, 1999)  
<https://www.irbnet.de/daten/iconda/CIB19881.pdf>

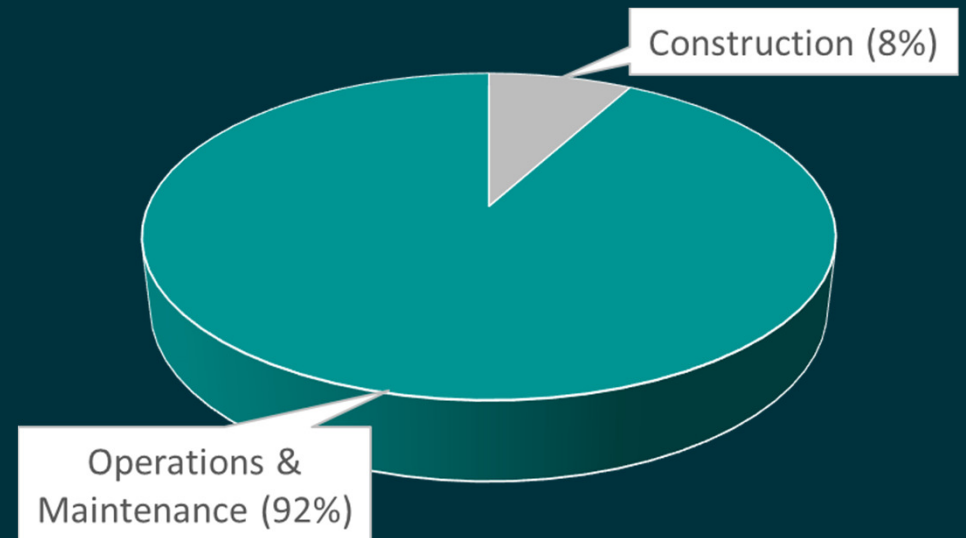
# Buildings



# Buildings

## Lifecycle Costing Workbook Components:

- Getting Started
- Introduction
- **Asset Purpose and Priority**
- **Lifecycle Costs**
  - Cost Estimate Classes
  - Example
- **Decision-Making Process**



*Source: City of Hamilton, Corporate Buildings & Real Estate Department (2001).*



# Buildings

## Lifecycle Costs

Age of Asset  
Expected Useful Life  
Remaining Life

	5 yrs
	80 yrs
	75 yrs

Interest Rate for Capital Expenditures  
Amortization Period for Loan  
Percentage of Total Capital for Financing

3%	applies to system capital renewals during asset lifecycle	
30	yrs	
20%	\$ 500,000.00	Loss

### Capital Cost for Initial Acquisition of Asset

Construction  
Site work and Landscaping  
Infrastructure Servicing  
Commissioning  
Staff Training  
Land Costs  
Furnishings  
Legal  
Architectural Engineering  
Environmental  
Archaeological  
Project Administration

\$	2,500,000.00
\$	-
\$	-
\$	-
\$	-
\$	-
\$	-
\$	-
\$	-
\$	-
\$	-
\$	-
\$	-
\$	2,500,000.00

**TOTAL INITIAL CAPITAL COST**

\$	500,000.00	<b>Loan Principal</b>
\$	2,000,000.00	<b>Downpayment</b>
\$	450,000.00	<b>Total Interest</b>
\$	15,000.00	<b>Annualized Interest over Loan Term</b>

### Asset Annual Operation and Maintenance (O&M)

Staffing  
Electricity  
Natural Gas/Diesel  
Water/Sewer  
Telephone  
Office Expenses  
Lease Expenses  
Chemicals and Other Cleaning Supplies  
Solid Waste and Recycling  
Building Maintenance and Repairs  
Site and Landscape Maintenance

\$	150,000.00
\$	6,000.00
\$	10,000.00
\$	500.00
\$	3,600.00
\$	1,500.00
\$	1,000.00
\$	200.00
\$	200.00
\$	2,500.00
\$	500.00

# Equipment and Vehicles



# Equipment and Vehicles

## Lifecycle Costs

Age of Asset  
Expected Useful Life  
Remaining Life

	5 yrs
	30 yrs
	25 yrs

Interest Rate for Capital Expenditures  
Amortization Period for Loan  
Percentage of Total Capital for Financing

	3%	<i>applies to system capital renewals during asset lifecycle</i>
	10 yrs	
	75%	

### Capital Cost for Initial Acquisition of Asset

Purchase  
Commissioning  
Staff Training  
Legal  
Project Administration

\$	75,000.00
\$	-
\$	-
\$	-
\$	-
\$	-
\$	75,000.00

\$	56,250.00	Loan Principal
\$	18,750.00	Downpayment
\$	16,875.00	Total Interest
\$	1,687.50	Annualized Interest over Loan Term

**TOTAL INITIAL CAPITAL COST**

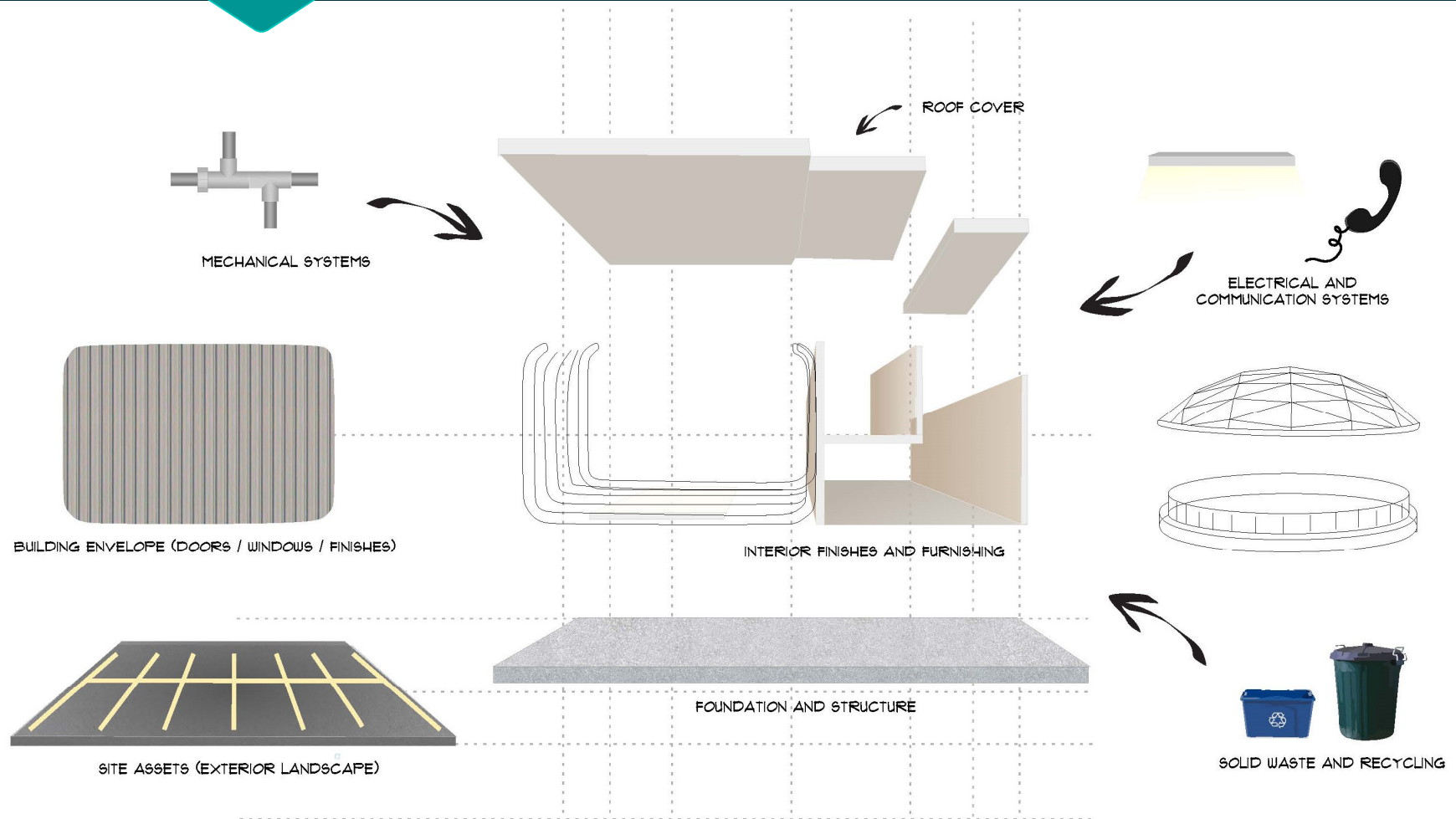
### Asset Annual Operation and Maintenance (O&M)

Staffing  
Electricity  
Unleaded Fuel/Natural Gas/Diesel  
Chemicals and Other Cleaning Supplies  
Maintenance and Repairs  
Spare Parts Procurement and Storage  
Service and Inspection  
Security  
Administration and Overhead  
Licensing, Insurance and Legal Costs

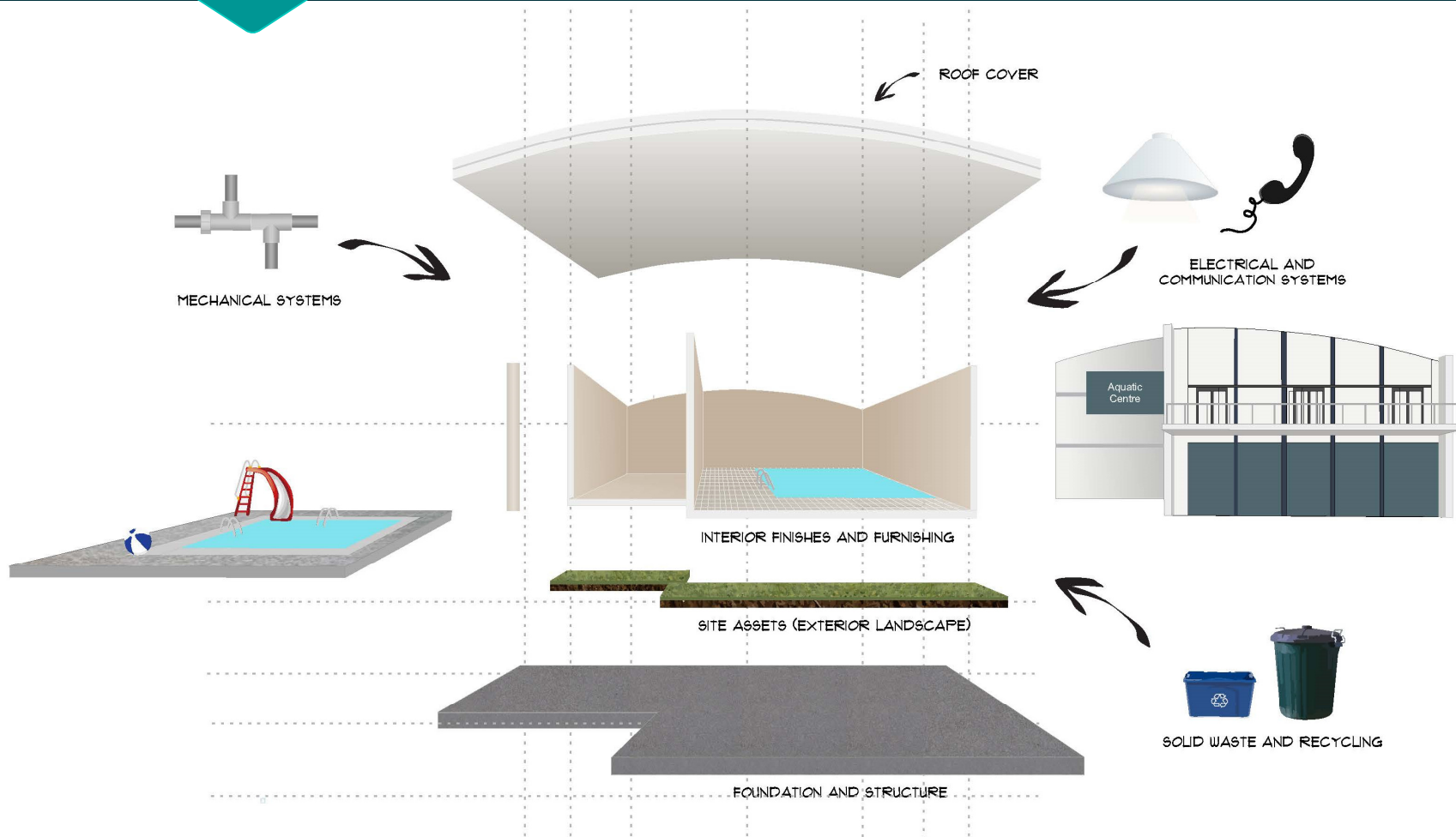
\$	-

**TOTAL ANNUAL O&M COST**

# Pools



# Arenas



# Next Steps

- Feedback welcome!
- Gather information regarding lifecycle costs from case study communities
- Prepare draft pool and arena workbooks
- Prepare supplementary Lifecycle Costing 'how to' Guide
- Circulate to communities; make available on NWTAC website

# Questions / Feedback

