

Workshop Road Map

- A. Resilient Communities & Water –
What Happens on the Land Matters
- B. How Local Governments are
Responding to a Changing Climate
- C. Will There be Sufficient Fresh Water
for Agriculture in the Future?
- D. Sustainable Service Delivery for
Watershed Systems



Glen Brown

Union of BC Municipalities



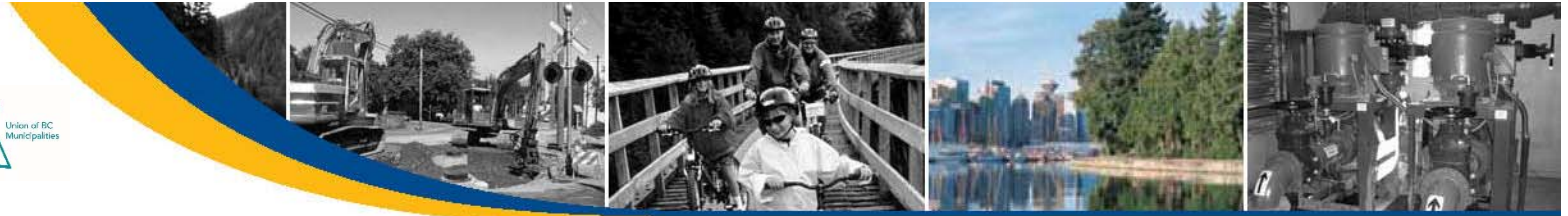
Kirby Eli

Irrigation Industry Association of BC



Eric Bonham

Partnership for Water Sustainability



Asset Management for Sustainable Service Delivery: A BC Framework Integrating Natural Capital



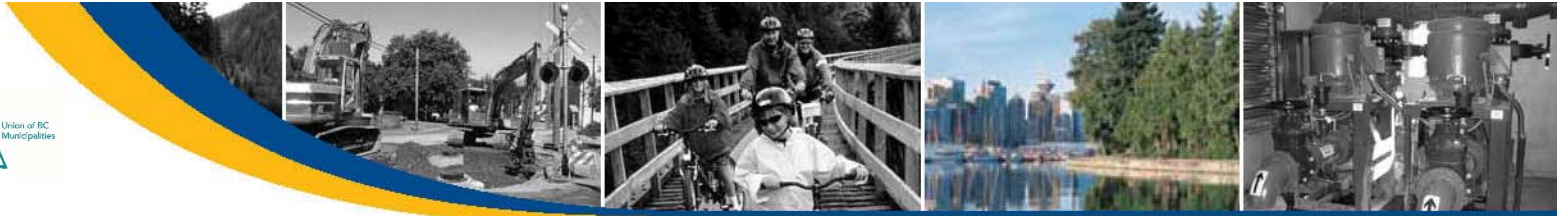
Glen Brown, General Manager, Victoria Operations, Union of BC Municipalities

2015 PWSBC Feast and Famine Workshop, Richmond, BC



What is Asset Management?

- Integrated approach involving planning, engineering and finance to effectively manage existing and new municipal infrastructure in a sustainable manner to maximize benefits, reduce risk and provide satisfactory levels of service to the community user in an environmentally and ecologically responsible manner. (National Asset Management Working Group)



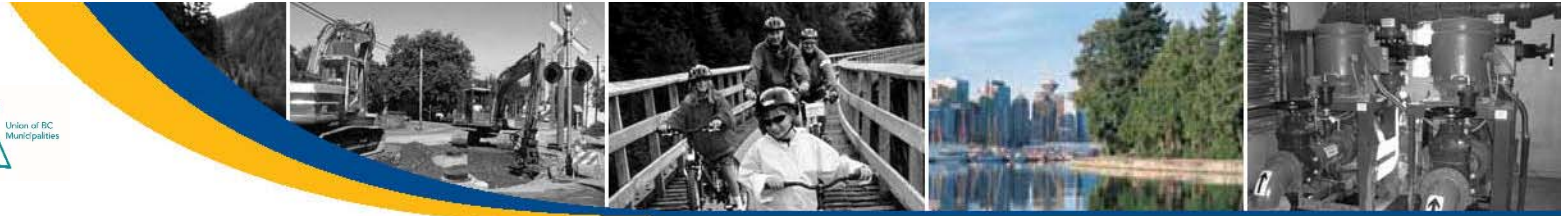
Principle #1 – It's all about the service



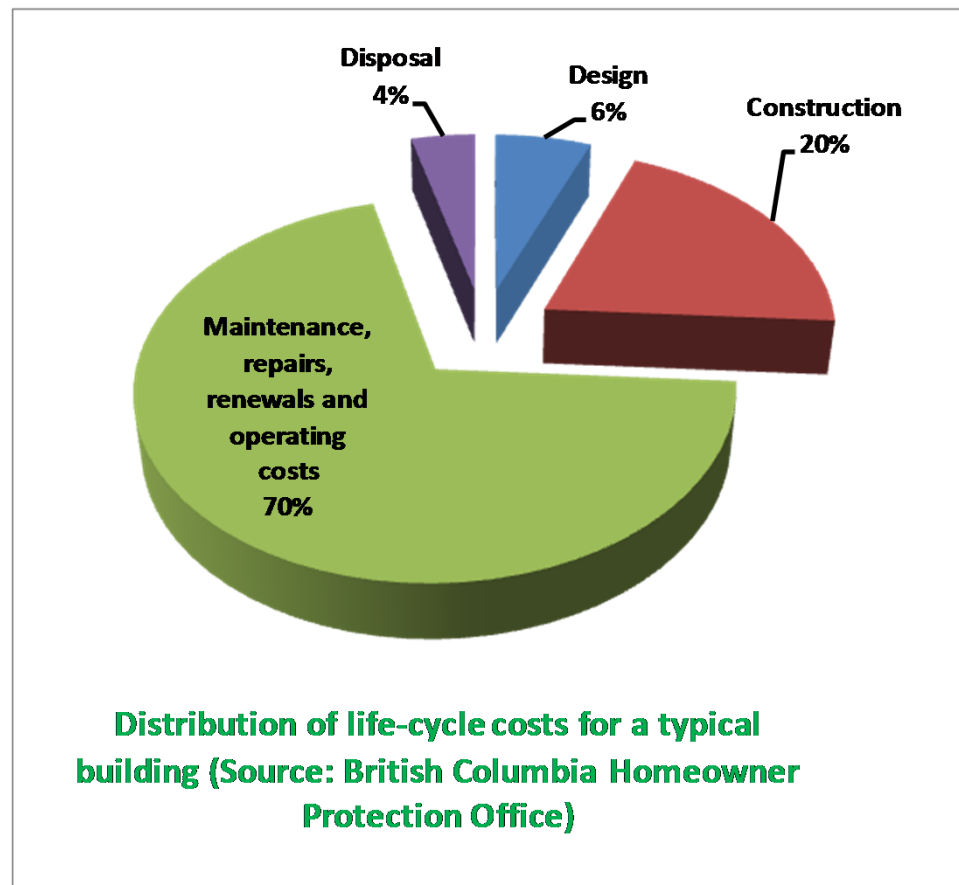


Principle #2 – Level of Service



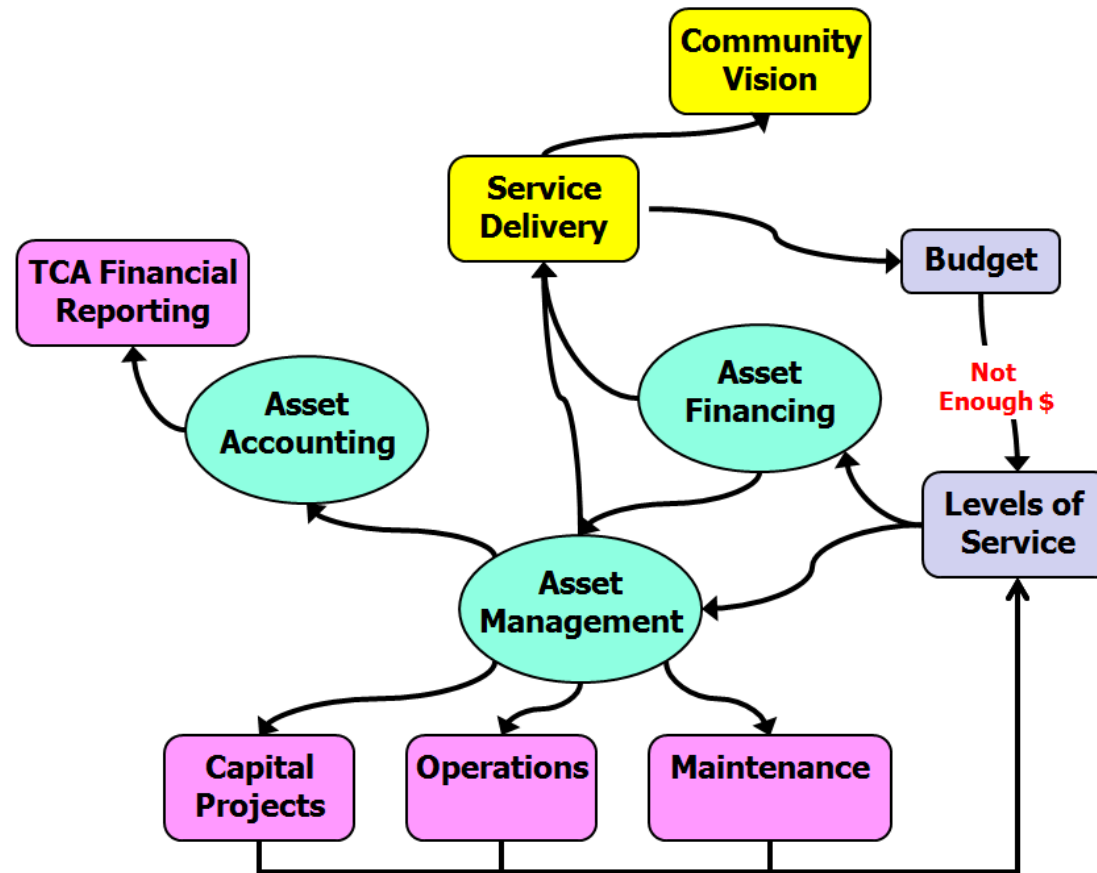


Principle #3 – Operations & Maintenance





Principle #4 – Inter-dependence





The Voice of British Columbia
Local Government



Sayt-K'iilim-Goot
one heart, one path, one nation



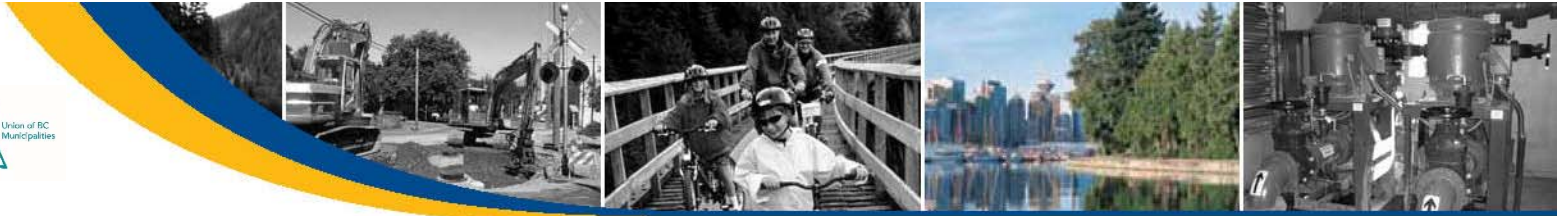


Asset Management BC

Singular Objective

“To create and facilitate opportunities to share knowledge, tools and information respecting ‘integrated’ asset management”





Asset Management for Sustainable Service Delivery: A BC Framework

Asset Management for Sustainable Service Delivery
A BC Framework

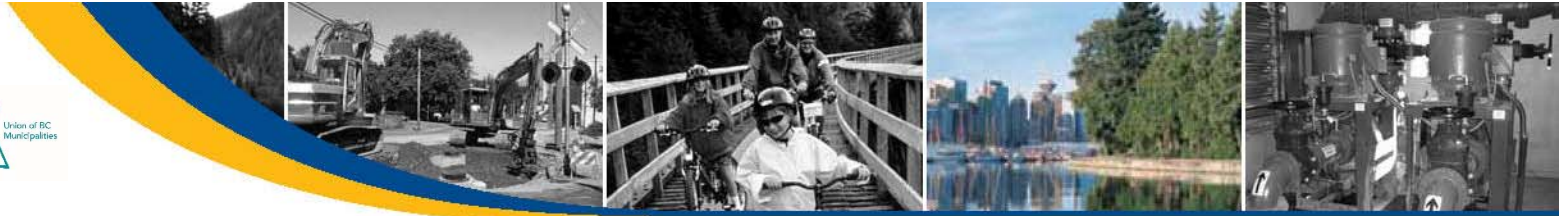
Sustainable Service Delivery

Sustainable Service Delivery ensures that current community services (roads, and how those services are delivered (in a socially, economically and environmentally responsible manner), do not compromise the ability of future generations to meet their own needs. Communities build and maintain infrastructure to provide services. These services support our quality of life, protect our health and safety, and promote social, economic and environmental well-being. Failure to care for our infrastructure, manage our natural resources and protect the benefits provided by nature risks degrading, or even losing, the services communities enjoy, and that future generations may rely on.

Sound asset management practices support Sustainable Service Delivery by considering community priorities, informed by an understanding of the trade offs between the available resources and the desired services.



<http://www.assetmanagementbc.ca>



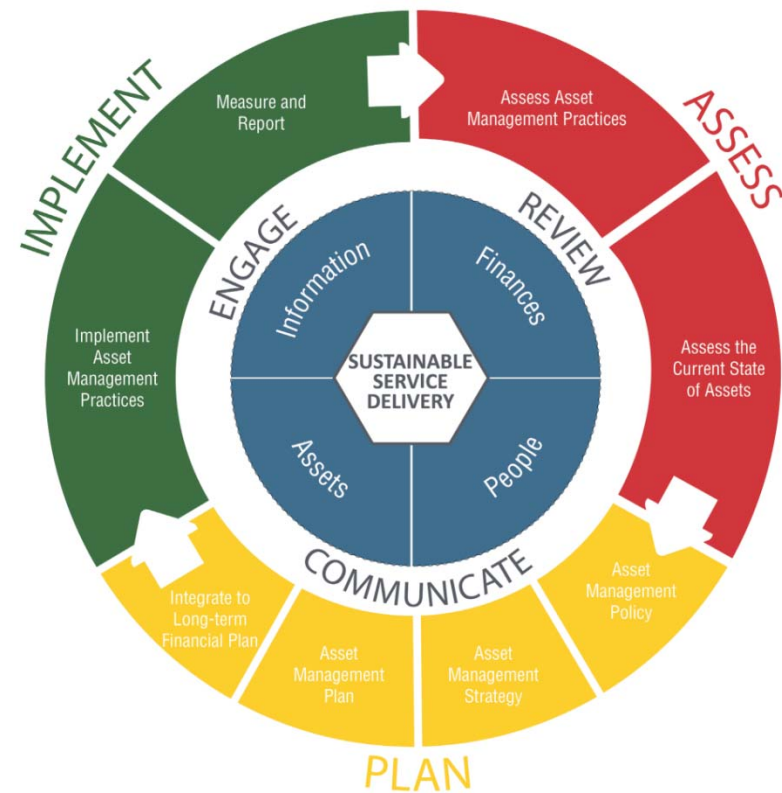
Sustainable Service Delivery

- Ensures that current community **Service Needs** are met
- **Delivered** in a Socially, Economically and Environmentally responsible manner
- Does not compromise ability of **Future Generations** to meet their needs
- Considers **Community Priorities**
- Understanding the **Trade-offs** between available **Resources** and **Desired Services**



Asset Management

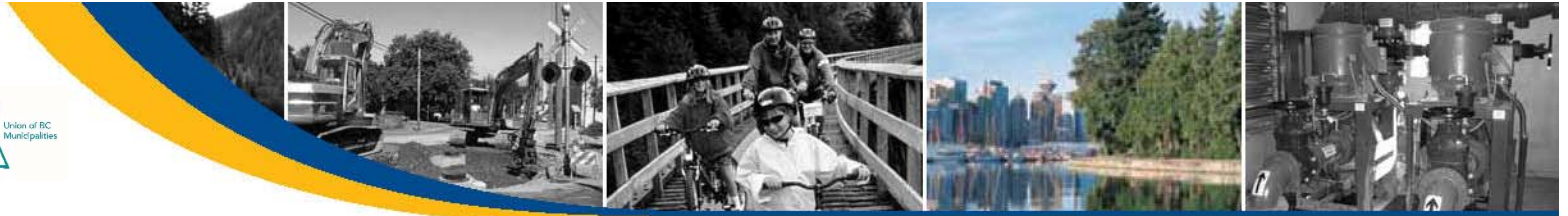
The **process** of bringing together the skills and activities of **people**; with **information** about the community's physical **infrastructure assets** and **financial resources** to ensure long term **sustainable service delivery**.





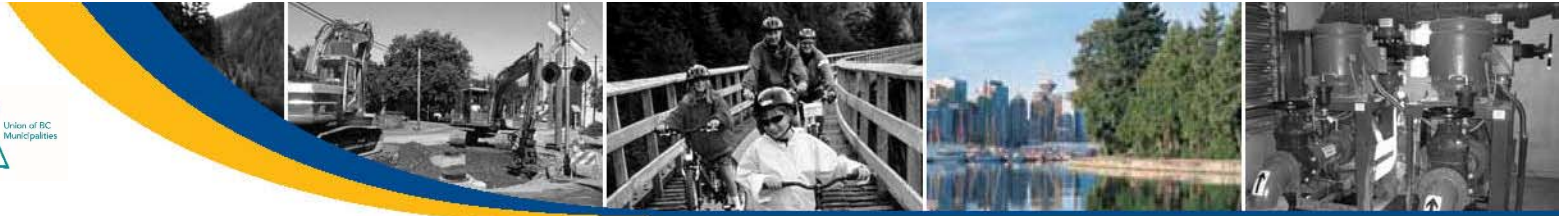
Core Elements

- **PEOPLE** – Culture and Capacity for Informed Decision-making
- **INFORMATION** – to Support Decision-making for Sustainable Service Delivery
- **ASSETS** - Physical Infrastructure to enable Service Delivery
- **FINANCES** – Understanding Long Term Costs of Service Delivery



Review, Communicate and Engage

- **Regular Reviews** – on-going throughout the process
- **Communicate** – internal team alignment and increased understanding
- **Engage** – education and raising awareness



The Process

- Continuous quality improvement process
- Incremental and Scalable
- **Assess** Capacity, Demand and Results
- **Planning** what needs to be done
- **Implementing** the plans





Asset Management BC

- What's New?
- Framework
- Resources
- Newsletters
- Documents
- About Us
- RSS Feed

:: WHAT'S NEW?

Posted: Monday, December 8th, 2014

Asset Management for Sustainable Service Delivery: A BC Framework

The Framework establishes a high-level, systematic approach that supports local governments in moving toward service, asset and financial sustainability through an asset management approach. The development of the Framework was led by the Union of British Columbia Municipalities in partnership with Asset Management BC. The "Asset Management for Sustainable Service Delivery: A BC Framework (Short Version)" is now available.

:: SEARCH

Search for:



- What's New?
- Framework
- Resources
- Newsletters
- Documents

BCWWA/GFOA-BC Asset Management Plan Workshop

Tuesday May 26th, 2015 in Penticton, BC.

The workshop will provide participants with information, through case studies and discussions, which will assist them in developing an effective AMP and incorporating finance and public perspectives, while also understanding how best to communicate the asset management strategy to Council or Board.

For detailed information: <http://bcwwa.org/resourcelibrary/Asset%20Management%20Workshop.pdf>

Posted: Wednesday, February 18th, 2015

Thirteenth Edition of the Asset Management Newsletter

Now available: [AMBC_Newsletter_Issue 13 Final Feb 2015](#)

Posted: Monday, November 17th, 2014

Twelfth Edition of the Asset Management Newsletter

Now available: [AMBC_Newsletter_Issue_No.12-LGAMWG-November_2014.pdf](#)

Posted: Wednesday, November 5th, 2014

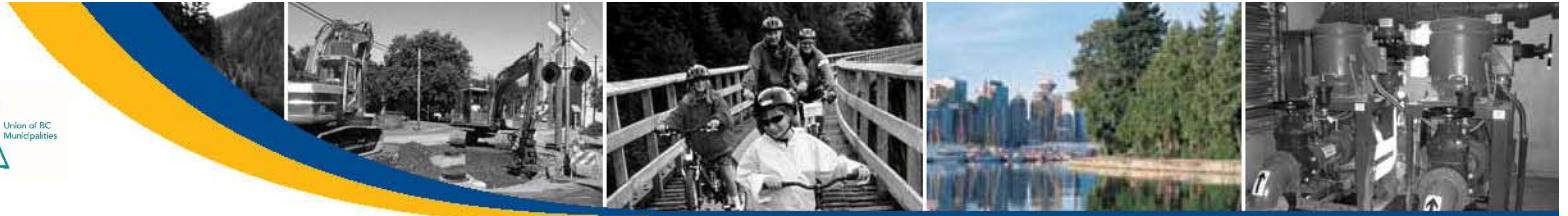
LGMA of BC's Latest Magazine Focuses on Asset Management

The Local Government Management Association of BC's Fall 2014 edition of their magazine contains articles and interviews on how local governments are progressing with asset management. Check it out [here](#).

- Columbia
- Municipal Insurance Association
- Government Finance Officers Association of BC
- Union of British Columbia Municipalities
- Aboriginal Affairs and Northern Development, BC Region
- Ministry of Community, Sport and Cultural Development, Local Government Infrastructure and Finance

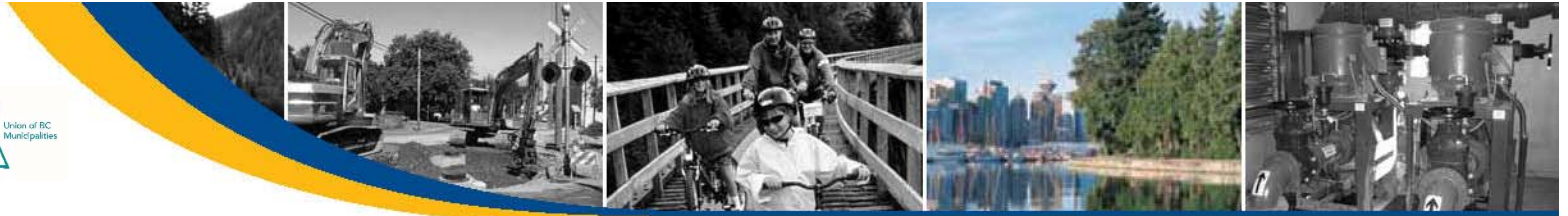
:: OTHER LINKS

- CivicInfo BC
- InfraGuide
- List of BC Local Governments
- National Asset Management Working Group



Integration of Natural Capital

- Local governments provide core services and are stewards of the physical infrastructure need to provide those services
- They are also stewards of the natural capital within their jurisdictions
- Natural capital provides services
 - These have value on their own



Core/Natural Service Integration

- Drinking Water
 - Watershed management
 - Water conservation
- Rainwater Management
 - Natural landscapes, soil, vegetation
- Erosion Protection



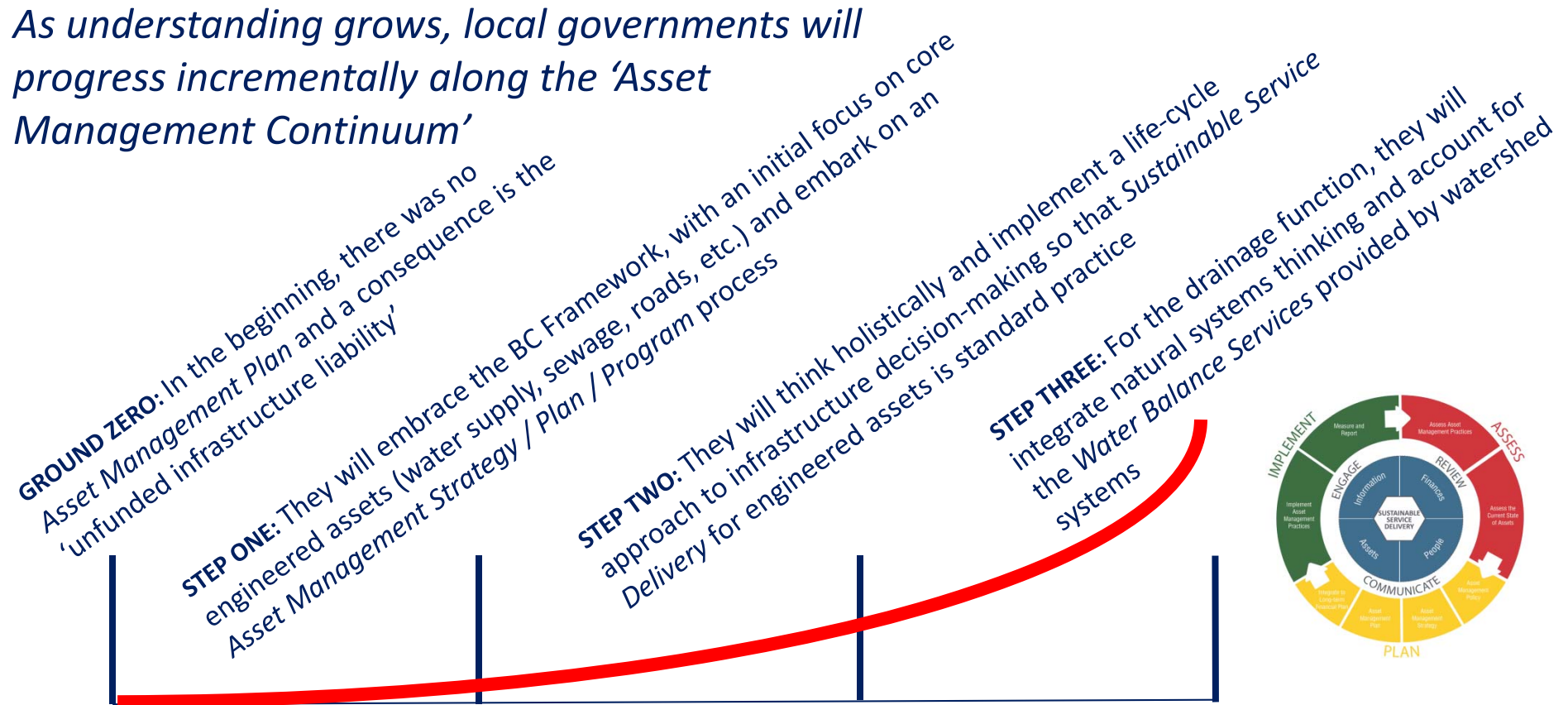
Integration with Asset Management

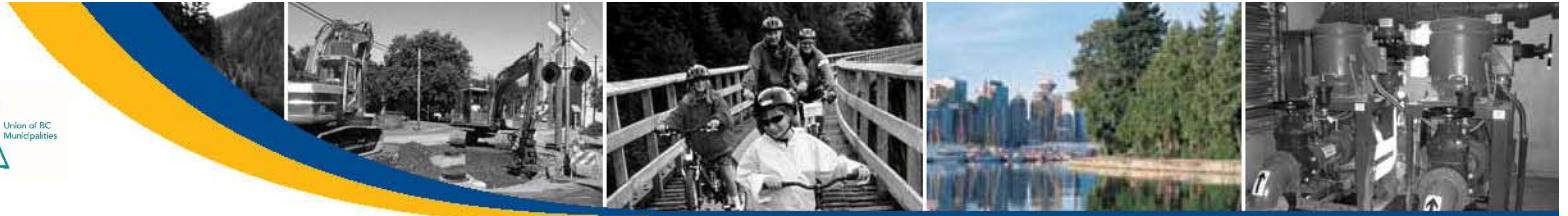
- ‘Leverage’ nature to support the delivery of core services
- Natural assets appreciate
- Reduce capital and O & M costs
- Increase ‘level of service’



Asset Management Continuum

As understanding grows, local governments will progress incrementally along the 'Asset Management Continuum'





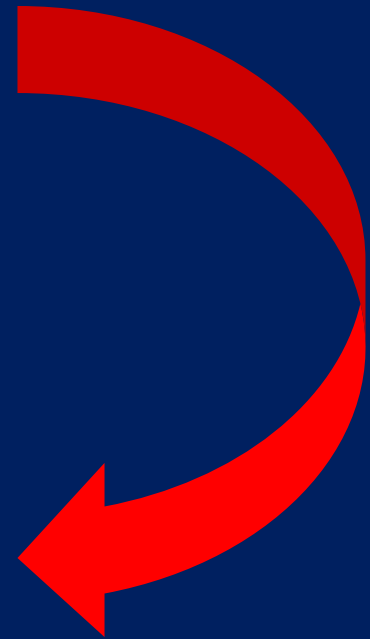
Desired Outcomes

- Nature, and natural capital is incorporated into local government asset management processes
- Recognize financial value
- Improved service level
- Improved stewardship

Next....



Kirby EII



High Efficiency Irrigation Standard

Save Water & Improve Landscape
Health

Kirby Ell CLIA, Kore Irrigation



How Much Water **should** an Irrigation System Use?



1 Acre Inch per week



102,000 L / Week



1 Acre Property
(If 100% Efficient)



2,040,000 L / Year

How Much Water **Does** an Irrigation System Use?



1 Acre Property
(If 50% Efficient)



4,080,000 L / Year
(4,080 m³)

1.63 Olympic Pools

FACT: Most of The Commercial Landscape Irrigation Systems Designed and Installed in the 90's and 2000's Have Been Operating at 50% Efficiency (or Less)

High Efficiency Irrigation Standard (HEIS)

- A. Created to use irrigation water more efficiently
 - 💧 What does Efficient Irrigation mean?
- B. It takes a holistic approach to water conservation
 - 💧 Considers ALL factors that impact water efficiency
 - 💧 Not just the design & installation of irrigation systems



Online HEIS Rating Tool

HEIS Project Point Accumulation Tracker

■ Mandatory
 ■ Minimum 1 of 2 required
 ■ Optional
 ■ To achieve project rating

Preliminary Project Information (required)

[Site](#)
[IIABC Professionals](#)

Steps

1	181
2	▼ 100
3	▼ 80
4	82
5	▼ 0
6	0
7	▼ 10
	84
8	▼ 100
9	▼ 0
	50

IIABC Base Standards (Minimum of 100 required)

[Info](#)

Water Use Allocation Budget

[Info](#)

Design Capacity Worksheet

[Info](#)

Product Component Rating

[Info](#)

Irrigation Management - Scheduling Worksheet

[Info](#)

IIABC Certified Professionals

[Info](#)

Complete Irrigation System Proficiency Assessment

[Info](#)

Irrigation System Efficiency Rating

Soils Condition Assessment / Recommendation

[Info](#)

Conservation Enhancements / Water Collection - Reuse

[Info](#)

High Efficiency Water Use for Project

Points are achieved for following IIABC Standards

HEIS Project Point Accumulation Tracker

■ Mandatory ■ Minimum 1 of 2 required ■ Optional ■ To achieve project rating

Preliminary Project Information (required) Steps

Site
IIABC Professionals

1

181

IIABC Base Standards (Minimum of 100 required)

[Info](#)

STANDARDS FOR HIGH EFFICIENCY LANDSCAPE IRRIGATION SYSTEMS

March 2014 Edition

IRRIGATION INDUSTRY ASSOCIATION OF BRITISH COLUMBIA

Project Compiler

General

Section Score Tracker

7 4 1 4

Entire Standards Score Tracker

42 4 4

- ☑ 1. **Scope of Work**
 - Supply and install all components of an automatic irrigation system to efficiently cover the landscape.
 - Utilize the IIABC's HEIS system components calculator to confirm the system is of sufficient efficiency.
 - Provide a scaled design drawing
- ☑ 2. **Quality Assurance**
 - The combination of the following IIABC Certified Professionals must be used (see HEIS calculator):
 - Certified Irrigation Contractor
 - Certified Irrigation Designer
 - Certified Irrigation Technician - Level 2
 - Certified Irrigation Scheduler
 - The contractor is a member of the IIABC
 - A written guarantee of a minimum of one year is provided to the owner
- ☑ 3. **Submittals**
 - Provide a scaled as built drawing showing controller location, master valve, zone control valves, main water connection, blow out connection, pump and other pertinent features.
 - Provide an operating and maintenance manual.
 - Provide a base schedule based on evapotranspiration for the location of the project.
 - Provide information on how to obtain local evapotranspiration data.
 - Provide an operating schedule for all zones for the peak time of year with suggested run times for seasonal changes.
 - Provide special tools required to service installed equipment.

Initial Planning

A. Site Evaluation

- What is the local climate like?
 - North exposure, southern exposure...
- Does the location have adequate soil?
- Is wind a factor?



Initial Planning - Drought Tolerant Plants



Initial Planning – Water Budget

- B. How much water is available
 - 💧 Municipal service
 - 💧 Watering restrictions
 - 💧 Well / Aquifer capacity
- C. Calculate an initial water budget
 - 💧 How much water will the landscape need?
- D. Is the water supply large enough to satisfy the needs of the landscape?
 - 💧 Is the initial concept still feasible?



A water budget is easily calculated

To calculate the LWR for the site, enter the information requested below (enter data in white cells only).

Step 2A - Enter The Annual Precipitation At The Site (R)

Average annual precipitation at site (inches/year)

9

STEP 2B - COMPLETE TABLE 1 BELOW (enter data in white cells only)

Enter the area of the hydrozone (square feet). The total area must equal the landscape area entered in Step 1A.

Choose the plant type from the dropdown list (source data is displayed in Table 2). Note, you may add additional plant types and associated KL values if you prefer.

Choose the irrigation type from the dropdown list (source data is displayed in Table 3).

Landscape Water Requirement

Zone	Hydrozone/Landscape Feature Area (sq. ft.)	Plant Type or Landscape Feature	Landscape Coefficient (K_L)	Irrigation Type	Irrigation Efficiency (IE)	LWR _H (gal/yr)
1	10000	Cool Season Turfgras ▼	0.8	Rotor ▼	80	82092.19
2	20000	Ground Cover ▼	0.5	Drip - Pre: ▼	95	75355.26
3	20000	Scrubs ▼	0.5	Fixed Spra ▼	75	95450

Points are achieved if the water required is less than the water budgeted for site

2

100

Water Use Allocation Budget

Info

STEP 3B - REVIEW THE LWA AND LWR FROM PART 1 AND PART 2

LWA

299195.91

LWR

252897.45

OUTPUT - DOES THE DESIGNED LANDSCAPE MEET THE WATER BUDGET?

Yes

If YES, then the water budget criterion is met.

If NO, landscape and/or irrigation system adjustments need to be made and reflected in Step 2B - LWR.

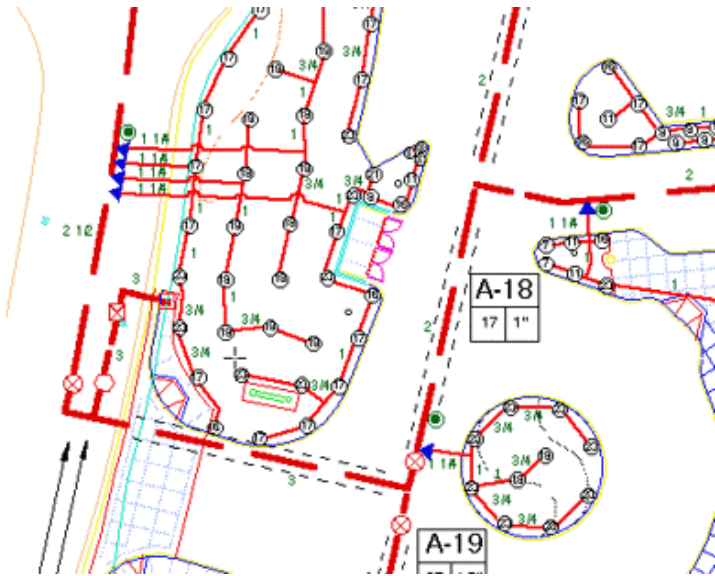
The designed landscape is

20

Turf

Design

- A. Certified Landscape & Irrigation Design
 - 💧 Ensures the design conforms to HEIS spec's



Design – Water Saving Layout

- B. Landscape layout should consider product limitations
- 💧 Limit curved planter beds
 - 💧 Turf dimensions equal to typical sprinkler radius
 - 💧 Minimum width of turf and shrub areas



Design – Water Efficient Products

- D. Ensure the irrigation system uses water saving products
- 💧 Efficient Sprinklers – min level of efficiency (DULO)
 - 💧 Check valves - prevent low-head drainage
 - 💧 Pressure regulation – misting & uneven coverage
 - 💧 Flow sensor - leak detection
 - 💧 Sensors – Rain, Moisture & Weather / Smart Controller



Irrigation Products are Rated by Performance and Features

4

82

Product Component Rating

[Info](#)

Product Rating Guide

Minimum of 80 Rating Average across all Product Categories on Project

2	82	1	Controllers		
1		1	Four (4) Program Capability		
3		3	Season Adjustment % by Program		
1		1	Multiple Programmable Sensor Inputs		
1		1	Master Valve Activation		
1		1	Flow Log Capabilities (Entered Flow or Actual Real Time Flow)		
3		3	Ability to self adjust station run times from current climatic / site data		
3		3	Ability to respond to flow sensor with system shut down & alert	13	13 150
1	82		Backflow Preventer	1	1 200
0	82	1	Master Valves	1	0 0
1	82	0	Flow Sensors	2	5 125
			Water Meter Size		
			FLOW SENSOR REQUIRED		
1	82	12	Solenoid Control Valves	5	5 100
		2	Flow Control		
		3	Pressure Regulation Compatible		
				5	5 100
				Site Static	
1	82		Pressure Regulator @ POC	135	psi
		1	Static PSI at POC over 75 PSI		
			PRESSURE REGULATION ADVISED		

Scheduling

A. Create an accurate schedule

- 💧 Soil, plants, sprinkler precip rates, current weather conditions...
- 💧 Use IIABC scheduling calculator

B. Evaluate System Performance

- 💧 Audit the irrigation system to ensure its performing as designed



System Pass Requires a Rating of 80

Preliminary Project Information (required) Steps

1	181
2	100
3	0
4	82
5	0
6	75
7	0
	73

Site
IIABC Professionals

IIABC Base Standards (Minimum of 100 required)

Water Use Allocation Budget

Design Capacity Worksheet

Product Component Rating

Irrigation Management - Scheduling Worksheet

IIABC Certified Professionals

Complete Irrigation System Proficiency Assessment

Irrigation System Efficiency Rating

The End

And in closing....



Eric Bonham

“Vision is not enough.
It must be combined with venture.
It is not enough to stare up the steps,
we must step up the stairs”

Vaclav Havel (1936-2011)
Essayist, poet, dissident, politician
Czechoslovakian President



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Data SIO, NOAA, U.S. Navy, NGA, GEBCO
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Living Water Smart
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Road through Paris COP21 – Where to from here?



MITIGATION → ADAPTATION

WATER – The CONNECTOR

Urban
Settlement

Tourism

Business

Fisheries

Forestry

Habitat / Watershed
Protection

Water
Security

Agriculture

Mining

Industry



POLIS Project
on
Ecological Governance
University of Victoria

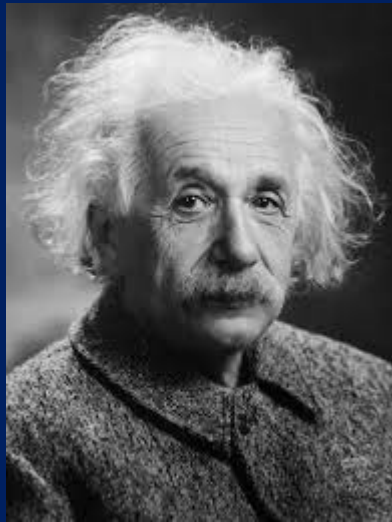
Awash with Opportunity

Ensuring the sustainability of British Columbia's new water law

OLIVER M. BRANDES, SAVANNAH CARR-WILSON, DEBORAH CURRAN, AND ROSIE SIMMS



Full report at www.poliswaterproject.org/awashwithopportunity



Albert Einstein

“No problem can be solved from
the same consciousness that
created it. We have to learn to
see the world anew “

Flood & Drought – Feast & Famine

Restoring the Balance

“A vision without a task is but a dream.
A task without a vision is but drudgery.
A vision with a task is the hope of the world.”

Church inscription
Suffolk, England 1786

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