

# *working for clean rivers*



ENVIRONMENTAL SERVICES  
CITY OF PORTLAND



**Green Asset Management**  
Sightline Institute Presentation – 11/14/13  
**Portland Bureau of  
Environmental Services**

# BES Green Asset Management Working Group

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- Nancy Hendrickson – Watershed Services
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- Henry Stevens – Watershed Services
- Maggie Skenderian – Watershed Services
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# Why We're Here Today

- Update colleagues on what Portland's Green Asset Management Working Group has done to date
- Share our findings and provide suggestions for next steps
- Exchange ideas



# Setting Context

- BES got started with Asset Management as a budgeting and risk management tool in 2008
- Focus to date has mostly been on grey assets
- Training in February 2012 inspired Watershed Services staff to learn more and form a Working Group



# Why Is Asset Management Important to Watershed Services?

- To identify and assess the condition of BES' Green Assets and make a case for Portland's Green Infrastructure
- To identify, Prioritize, Schedule and Budget maintenance activities for Green Assets and Infrastructure
- To explain the business case for what Watershed Services does
- To incorporate risks and benefits of Green Assets into BES decision making (e.g., CIP and nBCR)



# Asset Management will provide us with a common currency for valuing BES' Green Assets



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# Green Infrastructure Inventory Steering Team (GIIST)

- Develop a vision for green asset data systems as part of an asset registry
- Expand awareness of existing green datasets
- Identify and prioritize improvements to datasets based on unmet current or future business needs  
(examples: Hansen, Watershed Revegetation Program Database.)



# Green Asset Management Team (GAM)

- Identify challenges and opportunities for incorporating green assets into BES' AM program
- Develop a GAM framework to capture LOS and risk associated with green assets
- Research efforts by other utilities
- Build alliances with other BES AM teams





# The Nuts and Bolts

- Start with Inventory
- Assess the Condition
- Determine Probability of Failure
  - age, condition, estimated life
- Determine Consequence of Failure
  - lost services, replacement cost
- The Common Currency:  $PoF \times CoF = BRE$   
 $Risk \times \$ = Risk \$$

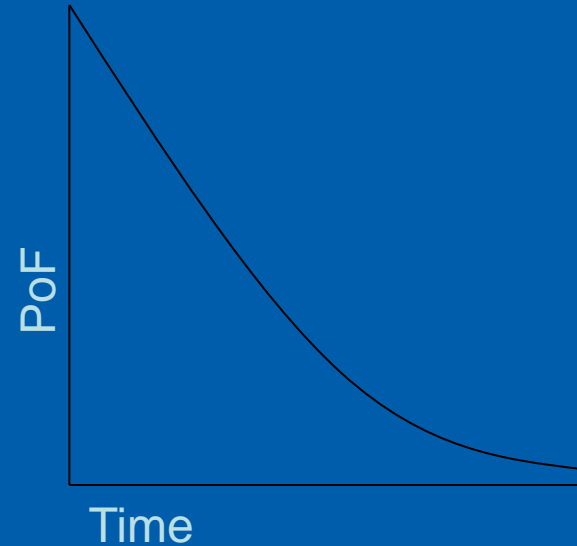
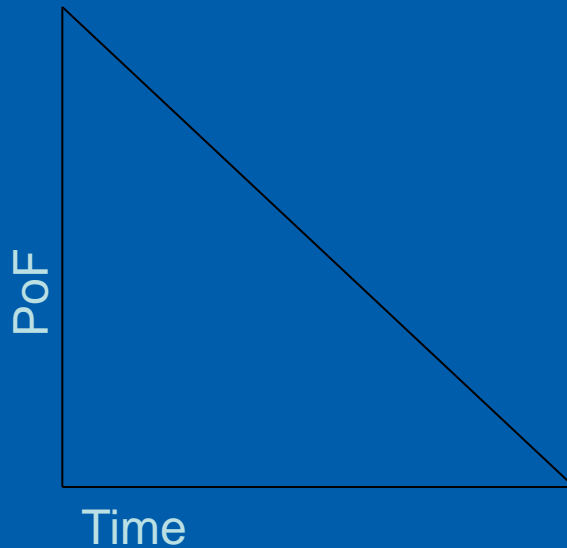


# Inventory

- GIIST
  - Tier I: BES invested and owned
  - Tier II: BES invested but not owned
  - Tier III: Not invested or owned but rely upon
- How much detail is useful



# How to determine PoF?

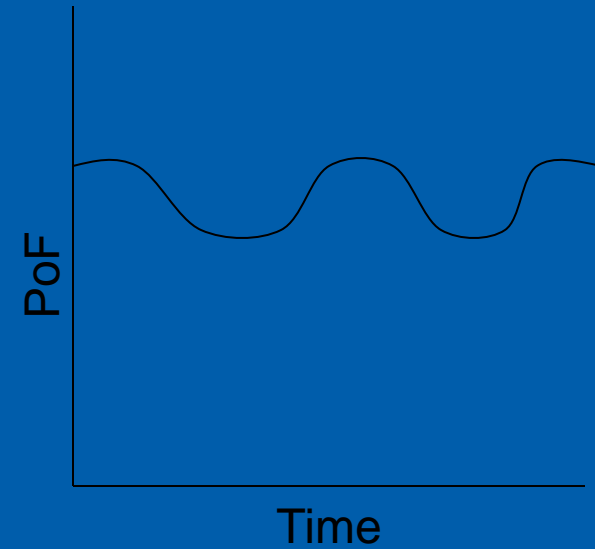
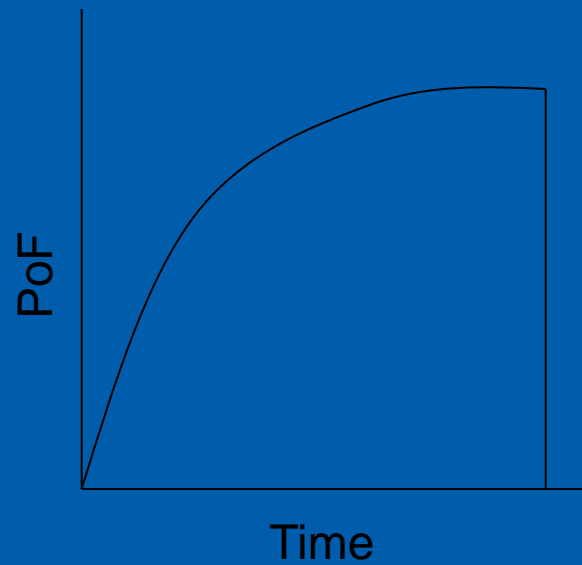
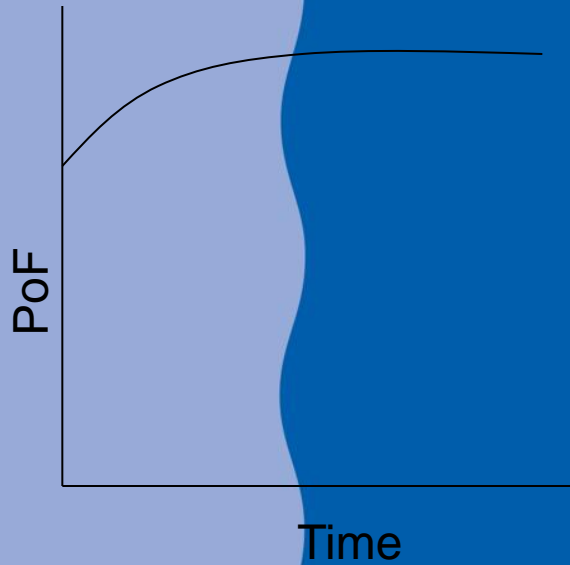


## Condition Curve for Grey Infrastructure



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# How to determine PoF?



## Condition Curve for Green Infrastructure



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# CoF: Valuing the Services of Grey Assets

## Core BES Services

- Convey sanitary and stormwater
- Maintain public health and safety
- Provide an approvable discharge point

## Additional Services

- Facilitate development



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# CoF: Valuing the Services of Green Assets

## Core BES Services

- Stormwater storage and conveyance
- Water Quality treatment
- Flood Storage

## Additional Services

- Carbon sequestration
- Recreation / Open Spaces
- Increased property values



# How to determine CoF?

Consequence of Failure - Wastewater						
Social/community/ organizational						
Loss of Service - Impact	Can be out of service indefinitely	Cannot be down a month	Cannot be down a week	Cannot be down 1 day	Cannot be down 8 hours	Cannot be down 1 hour
Safety	No impact	Minor inconvenience	Minor injury	Moderate injury and some sickness	Major injury, sickness, some death	Substantial death, widespread injury and sickness
Agency Image	No media or no consequence	Neutral coverage	Adverse media	Widely adverse media	Continual; political opposition	National adverse media
Economic/Financial						
Economics, Hassle Factor	Low cost & low hassle	Low cost & high hassle	High cost, low hassle	High cost, high hassle & diverts \$	Painful change of priorities	Likely trigger rate Increase, staff changes
Environmental						
Spill, Flood, Odor	Short duration, sm. qty. onsite; no complaints	Backups; small no. of complaints	Aggressive complaints and liability	Substantial liability, many impacted	Has not appened at this scale before	Sustained, lg. qty., offsite, many complaints
Process & Effluent Quality	No impact: SS, BOD, MPN, Cake	Routine adjustment	Significant corrective action	Significant adj. with uncertainty	Major process recovery with lag time and uncertainty	Loss of process control
Permit compliance	No consequence	Violated daily standard	Violated weekly standard	Violated Monthly Standard	Damage reversible in six months	Permit jeopardized; damage reversible in 5 yrs or more
Score	1	3	5	7	9	10



The image displays a screenshot of an Excel spreadsheet. The header row is highlighted in yellow and contains several columns with text labels, likely representing different categories or data types. The main body of the spreadsheet is filled with numerous rows of data, which are mostly illegible due to the low resolution and small font size. A vertical red line is drawn through the center of the table, separating the data into two halves. The spreadsheet appears to be a detailed data log or report.





What are our assets? (Registry)

Asset Hierarchy

LEVEL 1 (Infrastructure Category)	LEVEL 2 (Infrastructure Subcategory) Tier 1: BES Owns/Controls Tier 2: BES Direct Investment but no ownership/control Tier 3: BES Rels on but no investment, ownership/control	Level 3 (Project)	Level 4 (Component)
<b>Urban Trees</b>			
	<b>Trees in stormwater facilities (TIER 1-- inventory as a component of facilities, above?)</b>		
	<b>Street trees (ROW) BES paid for (TIER 2)</b>	<b>All T2R 2009 street trees</b>	
		3228 SE 12th Ave 1	Black Hawthorn
		3228 SE 12th Ave 2	Black Hawthorn
		3234 SE 13th Ave 1	Harvest Gold Linden
		3234 SE 13th Ave 2	Japanese Snowbell
		3234 SE 13th Ave 3	Japanese Snowbell
		3622 SE 10th Ave 1	Black Hawthorn
		3622 SE 10th Ave 2	Black Hawthorn
		3767 SE 10th Ave 1	Royal Raindrops Crabapple
		3767 SE 10th Ave 2	Royal Raindrops Crabapple
		3607 SE 8th Ave	Japanese Stewartia
		3766 SE 10TH	Henry Maple
		3772 SE 9th Ave	Royal Raindrops Crabapple
		3775 SE 10th Ave 1	Flame Maple
		3775 SE 10th Ave 2	Flame Maple
		1636 SE 25th Ave	Rocky Mtn. Glow Maple
		1636 SE 25th Ave	Rocky Mtn. Glow Maple
		1636 SE 25th Ave	Rocky Mtn. Glow Maple
		1616 SE Woodward 1	Henry Maple





Additional services/benefits/values (from Earth Economics 23 Ecosystem Services Categories) that meet other City Goals

(shaded columns are duplicates with BE3 Strategic Levels of Service)

Note: for now I've just used "low" values from Earth Economics

Gas Regulation	Carbon Sequestration	Disturbance Prevention	Soil Retention/ Erosion Control	Water regulation	Water Supply	Biological Control	Water Quality/ Waste Treatment	Soil Formation	Nutrient Cycling	Pollination	Habitat and Biodiversity	Nursery/ Reproduction Habitat	Aesthetic Information	Recreation	Cultural & Artistic	
	\$148.00															\$8,584.00
	\$1.00															\$58.00
	\$1.00															\$58.00
	\$1.00															\$58.00
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# What Other Utilities Have To Say

- Based on review of studies, reports and papers, we're seeing that there are many approaches being used to value Green Assets.
- CWS: Marching to the beat of their own drummer > Water Quality Trading
- Seattle Public Utilities > Still searching for effective way to make a business case for hydrologic benefits of natural systems
- SF Public Utilities: Have a robust system for Grey Assets but don't yet know how to incorporate Green Assets

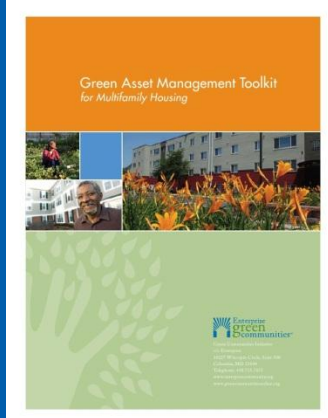
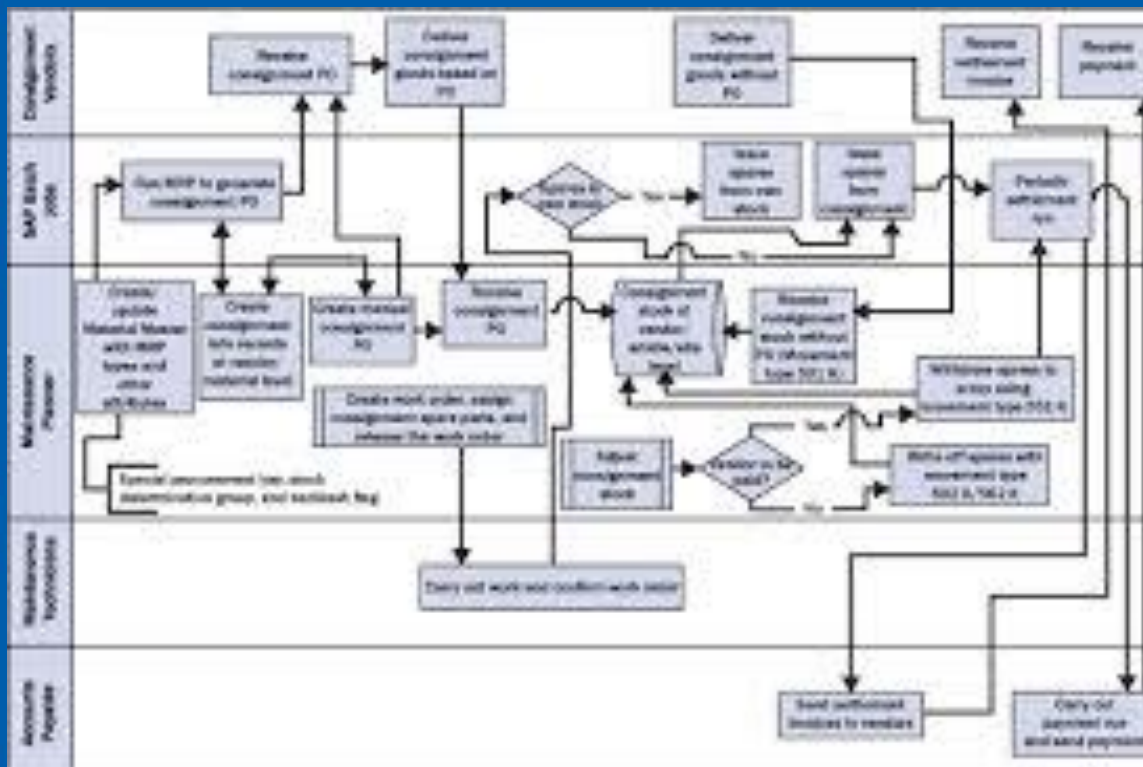


# Summary

- There's a lot of boxes to fill in
- There's both too much information and not enough information out there
- We're not as far behind as we thought



# Grey vs. Green AM



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# Recommendations

- We might consider 4 approaches:
  1. Work with other utilities in the area to create data and a communication plan along the lines of the CNT tool
  2. Continue to work on gathering relevant data and engage with other BES Asset Management work teams
  3. Take a fairly narrow approach to quantify an existing Green Asset
  4. Look at long term policy to fund and support green infrastructure, e.g. Healthy Watershed Districts

