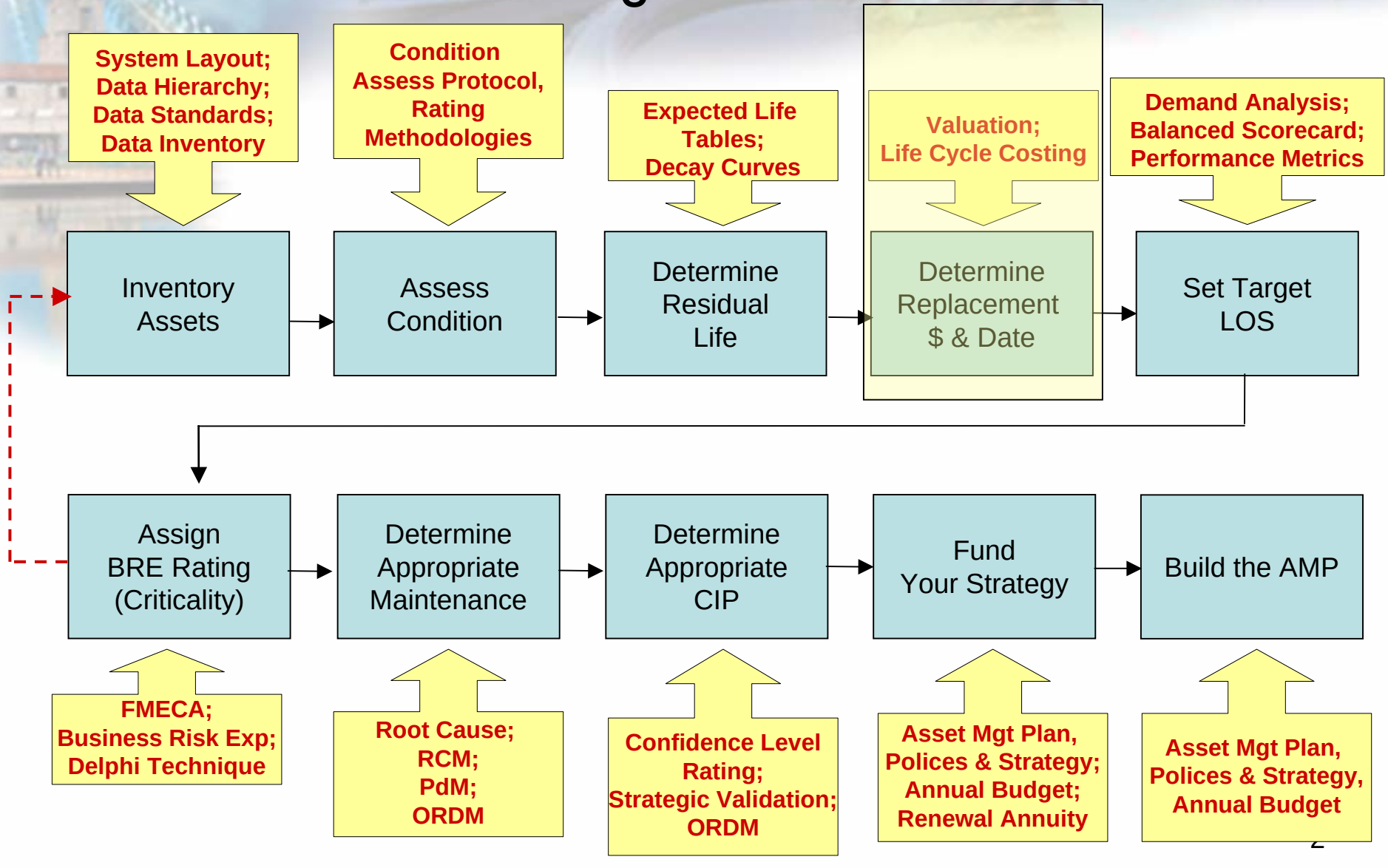
Q1c. What Is The Value Of My Assets?

AMPLE

Asset Management Program Learning Environment

Core AAM Program Process Tools



Definitions – "Cost"

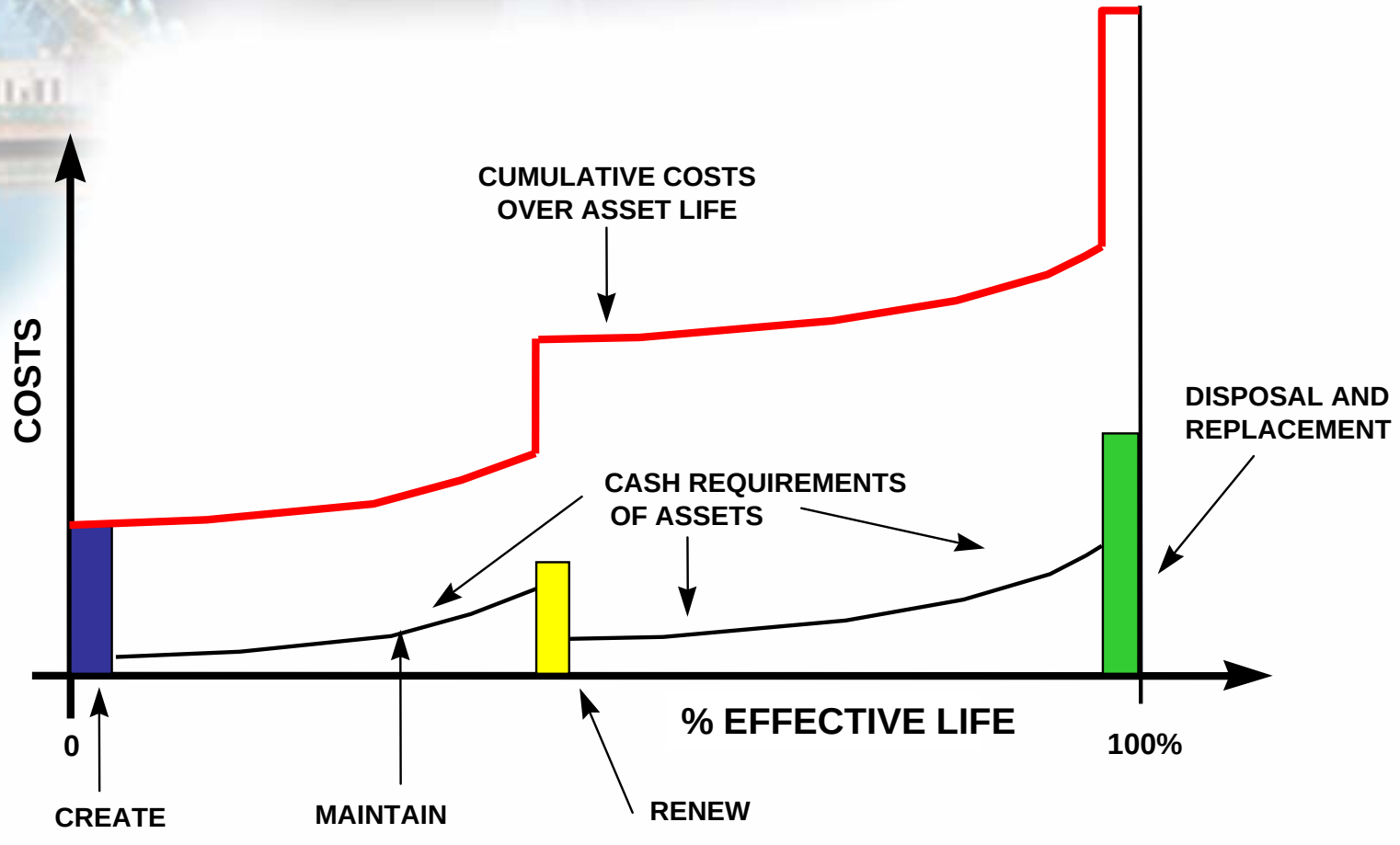
- **Cost -** The direct and indirect impact (specifically negative impact) of an activity, including money, time, labor, disruption, goodwill, political and intangible items.
- **Capital Cost -** The cost associated with the development of a project, including site acquisition, design, construction, interim financing, and project management or the cost incurred by the agency in procuring additional or upgraded assets.
- **Cost-In-Use -** The cost of ownership including operating, maintenance, cleaning, alterations, replacement and support costs.
- **Current Cost -** The cost of an asset measured by reference to the lowest cost at which the gross future economic benefits embodied in the asset could currently be obtained in the normal course of business.
- **Current Replacement Cost -** The cost of the future economic benefits expected to be derived from use of the asset, estimated as the current cost of the future economic benefits of the most appropriate replacement facility.
- **Current Reproduction Cost -** The current cost of reproducing (replicating) the asset in terms of both scale and technology.
- **Estimated Total Cost** - All costs of a capital nature that are required to bring a project to completion. Costs include planning, construction, land and equipment. Does not include operating costs, staffing costs and the cost of maintenance and refurbishment that are included in whole of life costs.
- **Life Cycle Cost -** The total cost of an item throughout its life, including the costs of planning, design, acquisition, operations, maintenance, and disposal, less any residual value, or the total cost of providing, owning, and maintaining a building or component over a predetermined evaluation period.
- **Recurrent Costs** - All costs, including the cost of finance, incurred in holding and operating an asset. Source:
- **Whole-of-Life Costs** - All costs involved in a project including the capital costs (planning, construction, land and equipment) and the operating costs (staffing costs and the costs of maintenance and refurbishment).

AAM's Two Major Cost "Perspectives"

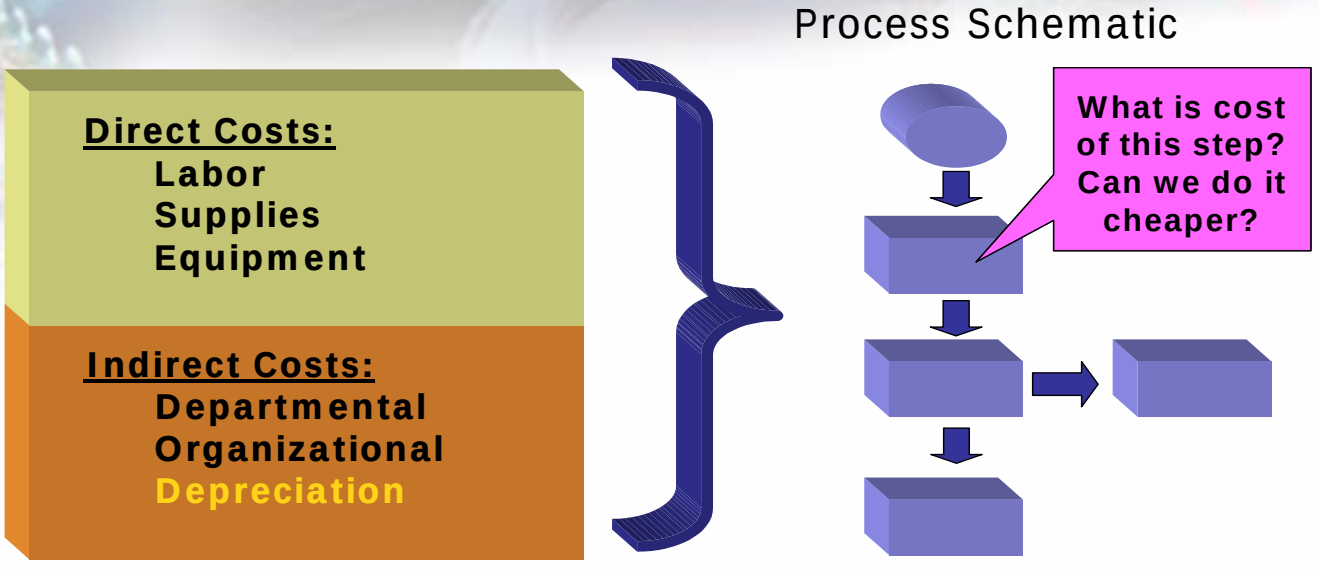
- Direct Life Cycle Costs
  - Acquisition
  - Operation
  - Maintenance
  - Renew
    - Repair
    - Rehabilitate
    - Replace
  - Dispose/Decommission

- "Economic" Costs
  - Financial Costs
    - Direct Costs to the Government Organization
    - Direct Customer Costs
    - Community Costs
  - "Triple Bottom Line"
    - Financial/economic
    - Social
    - Environmental

The Nature of Life-Cycle Costs



Determining Life Cycle Costs



1. Cost Tracking
   - CMMS integrated to financial system
   - Activity Based Accounting set up
   - Storage over time

2. Cost Allocation

Primary Cost Unit	Minor code	Number of Units	$/Unit	Allocated Cost
Direct Labor				
	Direct Pay	2.5 hours	$42.00	$105.00
	Overhead	.5 hours	$6.00	$3.00
	Benefit Burden	1	$8.20	$8.20
	FICA, etc	1	$2.20	$2.20
Materials				
	Vehicle	1.5 hours	$47.15	$70.73
	Pipe	160 feet 8" PVC	$1.20/foot	$ 192.00

Measuring Full Economic Costs

- **Direct Costs to the Local Government**
  - Repair and return to service costs
  - Service outage mitigation costs
  - Utility emergency response costs
  - Public safety costs
  - Admin & legal costs of damage settlements
  - (Lost product costs)
- **Direct Customer Costs**
  - Property damage costs (including restoration of business)
  - Service outage costs
  - Service outage mitigation and substitution costs
  - Access impairment and travel delay costs
  - Health damages
- **Community Costs**
  - Emotional strain/welfare
  - Environmental Pollution, erosion, sedimentation
  - Destruction of/damage to habitat
  - “Attractability” (tourist, economic)

Definitions – "Value"

- **Condition Based Value** - The current value of the asset, generally measured as the replacement cost less the monetary value associated with the actual deterioration of its condition.
- **Current Market Value** - The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.
- **Current Value** - The value of an asset at the present time. It may be estimated from the current market value or where the market is deficient, by other methods such as depreciated value using current cost accounting.
- **Depreciated Value ("Book Value")** – Value of an asset as determined using Generally Accepted Accounting Principles and as reflected on the balance sheet.
- **Deprival Value** - The direct and indirect loss which might be incurred by an organization if it were deprived of an asset; it assumes replacement of that which needs to be replaced rather than that which presently exists, hence factoring in current utilization of the asset.
- **Disposal Value** - See "Net Market Value" below.
- **Insurance Value** - The value on which insurance premiums are based.
- **Net Market Value** - The amount that could be expected to be received from the disposal of an asset in an orderly market after deducting costs expected to be incurred when realizing the proceeds of the disposal.
- **Replacement Value** – The current cost to substitute an entire asset with a new or equivalent asset without enhancement of capabilities.
- **Residual Value** - The net amount expected to be recovered on disposal of a depreciable asset at the end of its useful life.

Reasons for Valuing Assets

- Financial reporting/auditing
- Measuring loss of service potential (de / depreciation)
- Pricing/funding
- Determination of equit
- Risk managemen ance)
- Sale and p akeovers/mergers
- AM d aking – especially renewals
- B rking

Measuring "Sustained Stewardship"

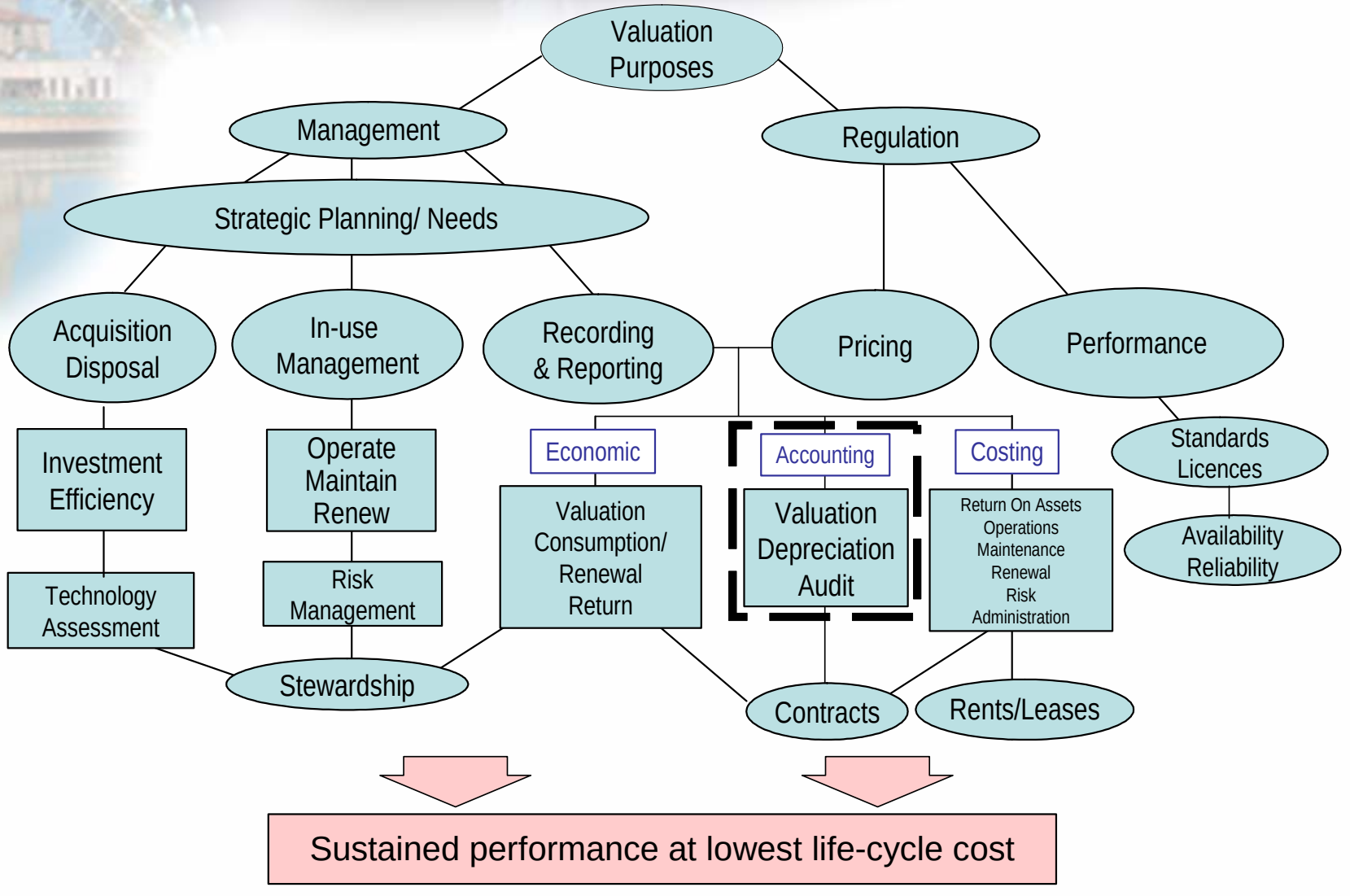
The Valuation Perspective

- Macro view
  - Financials
  - GASB
- Micro view
  - Life-cycle cost
  - Economic life
  - Optimal Renewal Decision Making

Aggregation of all assets

The individual asset

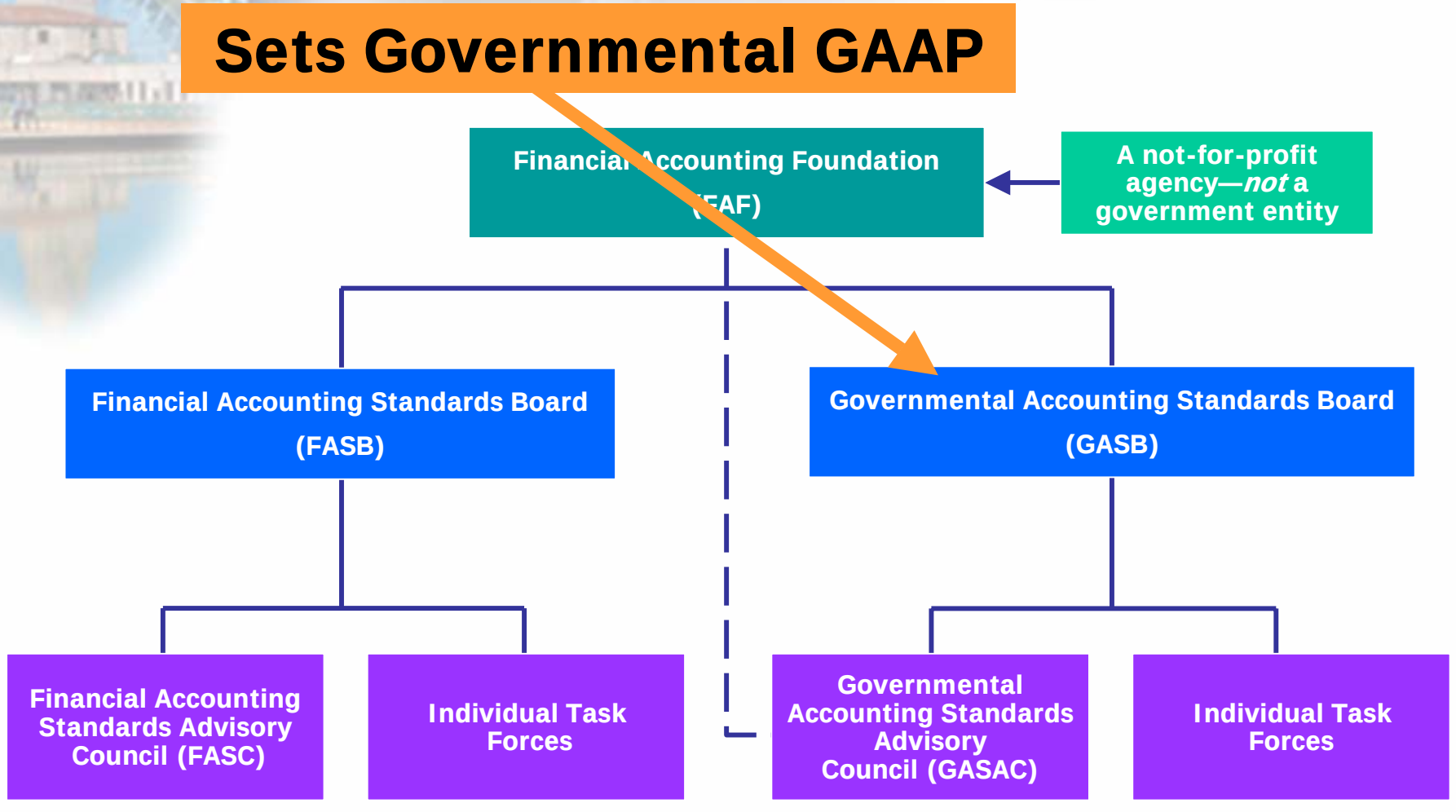
Valuation Purposes & Uses



Valuation Approaches

- Comparable Sales / Market Selling Price
- Earnings based / Cash Income NPV
- Replacement Value
  - Historic cost
  - Renewal cost
  - Reproduction cost
  - Deprival cost
  - Depreciated Replacement Cost (DRC)
  - Optimized Depreciated Replacement Cost (ORDC)

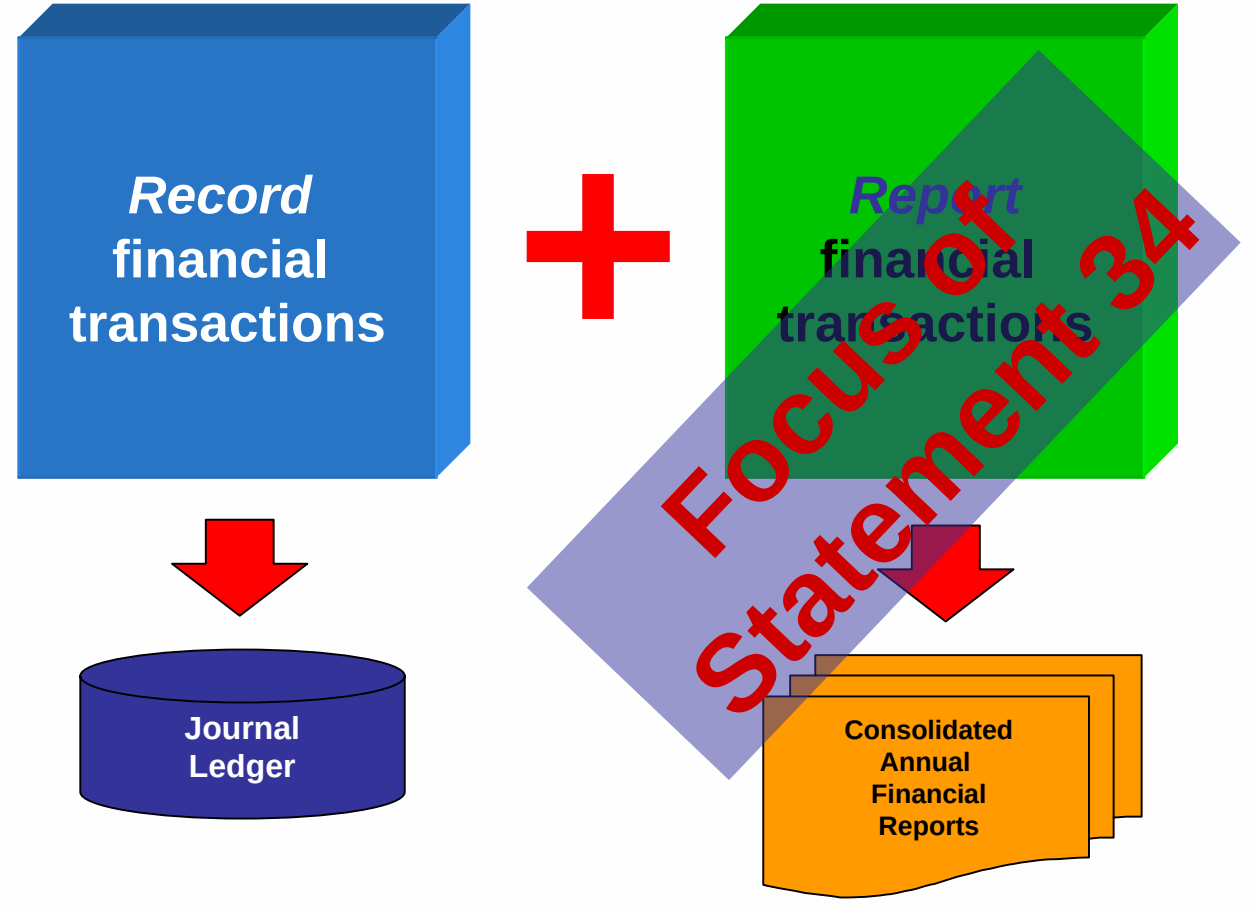
GASB - How GAAP is Set



What GAAP Is All About

Practices And Procedures By Which Governments:

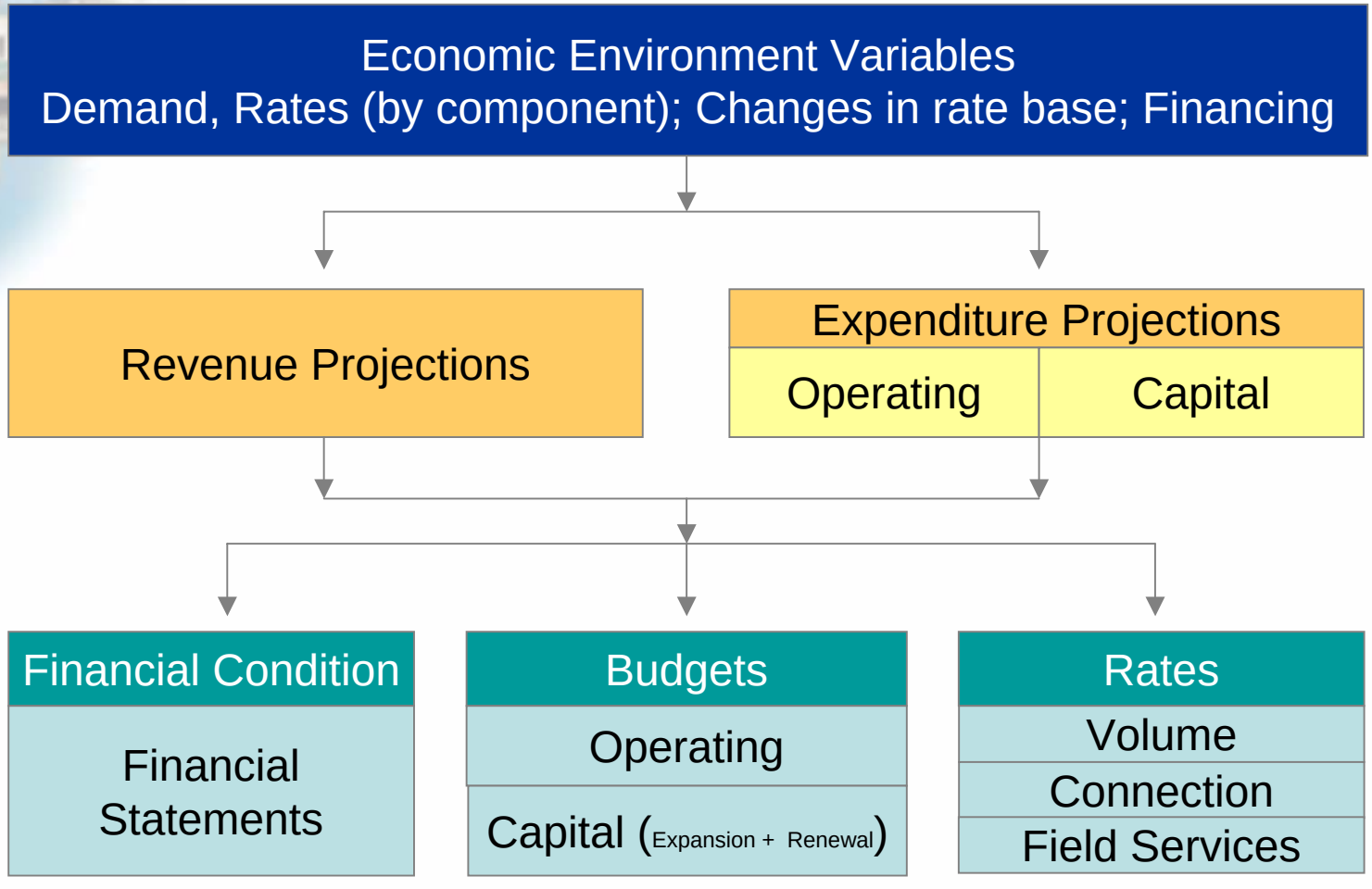
Source Documents
Tax Receipts
Paychecks
Invoice payments
Debt payments



What It's All About: the Financial Perspective

Wealth	"Profit"	Cash Flow
(Snapshot)	(Revenue less expenses over specific period of time)	(Over specific period of time)

The Utility Financial Model



What is the Story to Be Told? – "Disclosure" & "Financial Condition"

- Financial condition – a government's ability to provide services as committed and to meet obligations as they fall due:
  - A. Liquidity
  - B. Solvency
    1. Cash solvency – the capacity for the utility to cover its cash obligations over the next 30 to 60 days;
    2. Budgetary solvency – the capacity for the utility to cover budget appropriations within the current budget cycle;
    3. Structural (long term) solvency – the relationship of assets to long term liabilities over time; and
    4. Service level solvency – the capacity for the utility to maintain a target Level of Service over multiple budget cycles.
  - C. Fiscal Capacity

Reporting of Capital Assets

- One of the main goals of the new reporting model is to provide information about the "full cost" of providing government services.
- Cost of services must include the consumption of capital resources used to provide those services.
- Two techniques for estimating those "consumption of capital" costs are available:
  - Depreciation
  - "Modified" (preservation) method

Why Two Methods of Valuation?
Finite-lived versus Indefinite-lived Capital Assets:

"Consumable" Assets:

- Vehicles
- Equipment
- Metal Building
- Signs
- Furniture and Fixtures

"Preservable" Assets:

- Roads
- Bridges
- Stormwater Systems
- Water/Sewer
  - Collection systems
  - Distribution systems
  - Treatment Plants

Traditional “GAAP” Depreciation

Perceived advantages of traditional depreciation

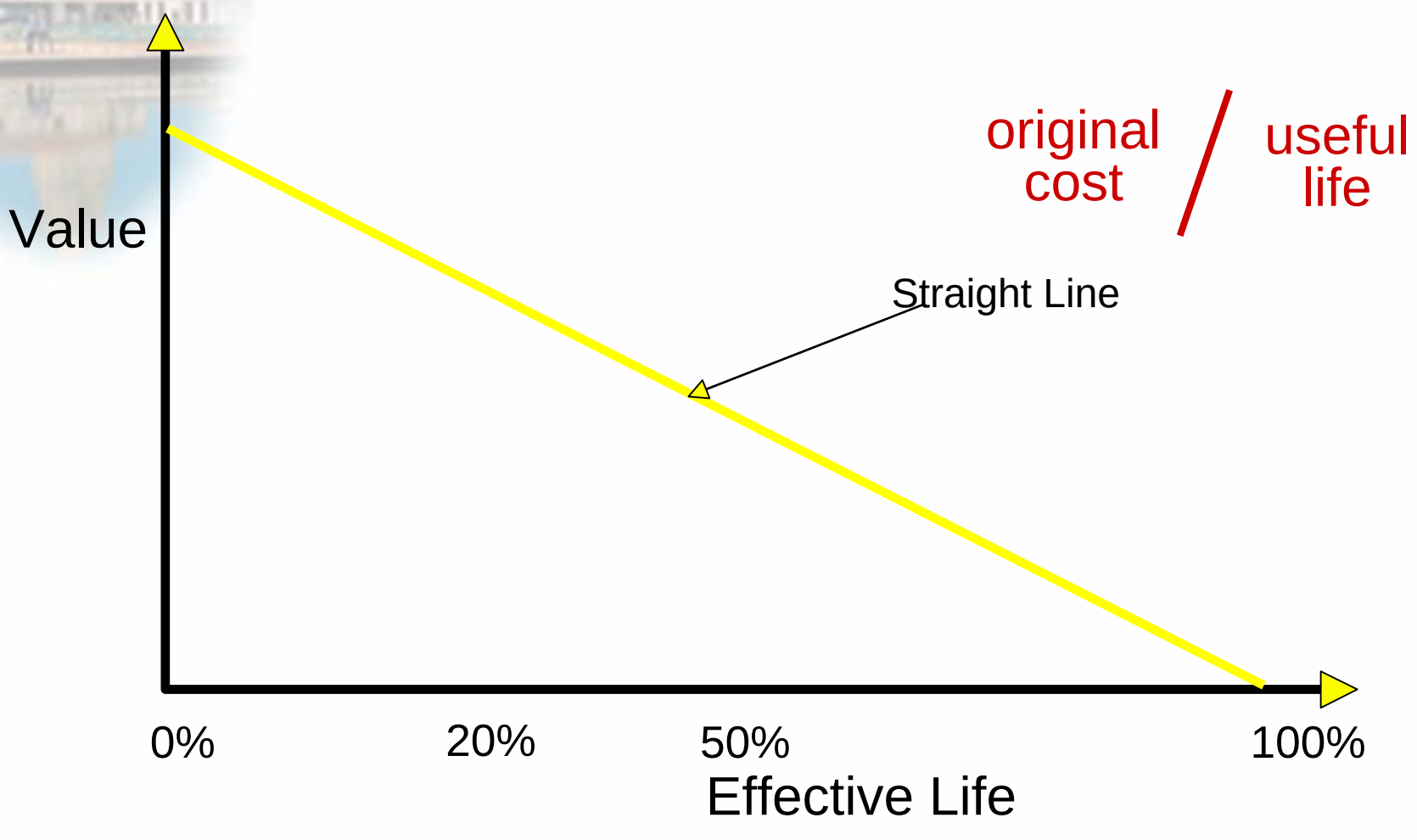
- ✓ Authoritative under Generally Accepted Accounting Principles
- ✓ Easy to calculate
- ✓ More certainty from valuation perspective (source documents)

Perceived disadvantages of traditional depreciation

- X Backward looking, allocation of past costs
- X Conveys a precision that doesn’t reflect reality
- X Perceived as remote from decisions on managing assets
- X Emphasis on an individual asset, not the network

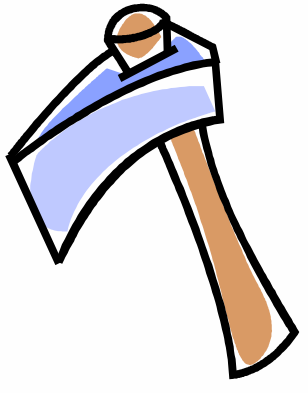
Basic Depreciation Method

- Straight line depreciation
  - easy to apply but rarely a true reflection of decay



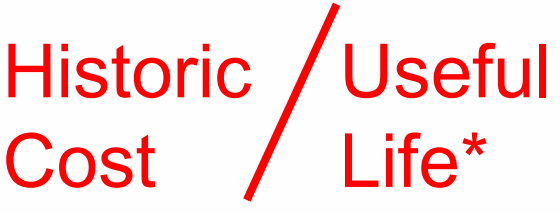
Characteristics of Infrastructure Assets

- Don’t actually (physically) depreciate on a straight line basis - that is, loss of service potential is not evenly distributed across time
- Large networks are made up of components that are replaced, but network service potential remains constant
- Are maintained in perpetuity (Grandfather’s axe)



Alternative GAAP Valuation Methods

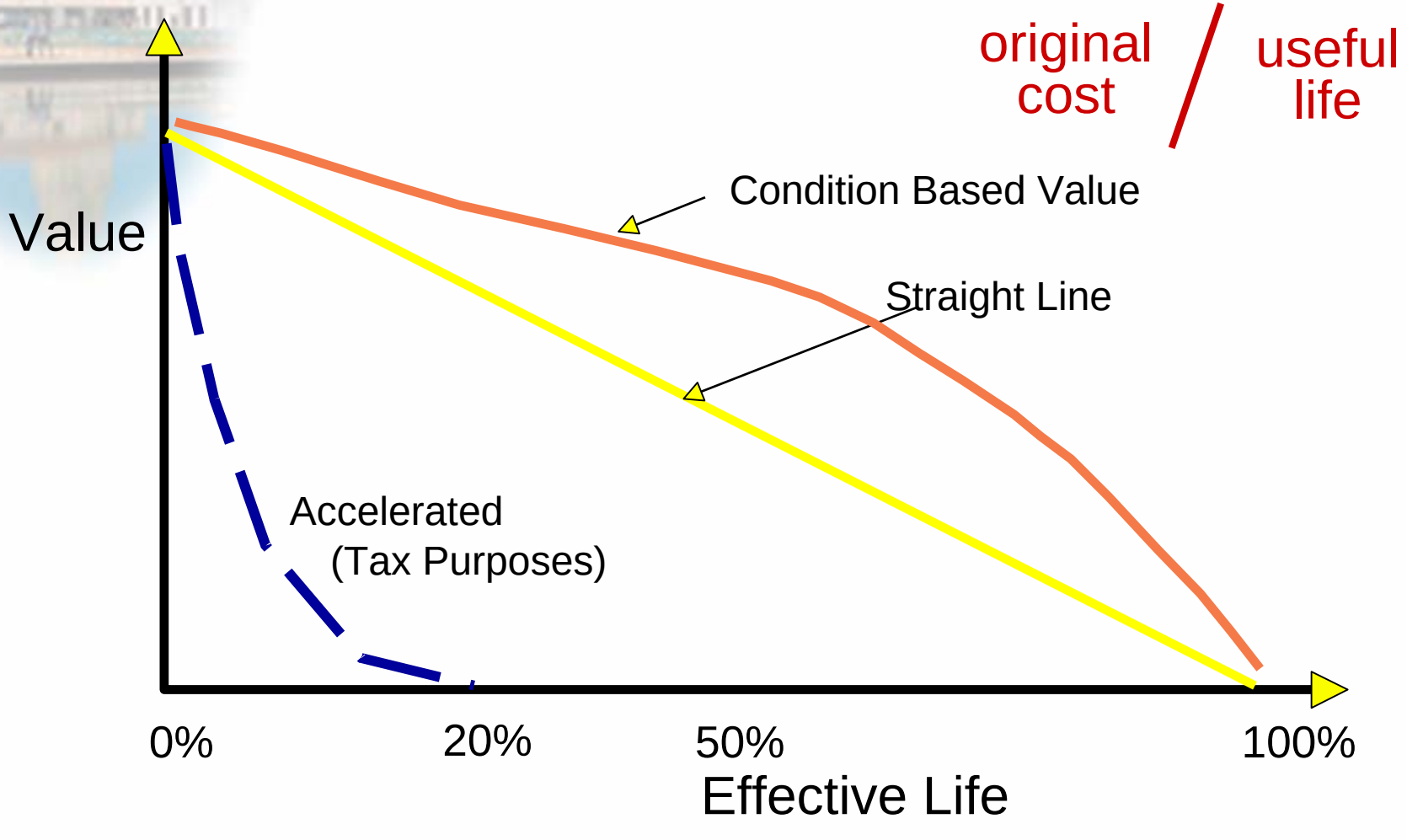
- Condition based depreciation (CBD)
  - Uses condition based data to identify remaining useful life
  - Deals at *component or asset* level
  - Requires accurate condition rating system
  - Recognized by GAAP in US



* Where useful life is non-linear

GAAP Depreciation Methods

- GAAP alternatives to straight-line depreciation



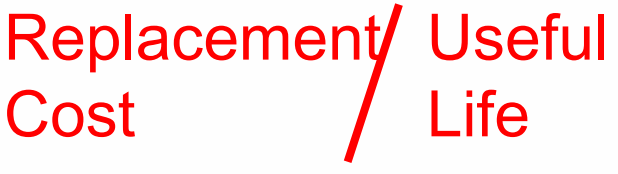
Alternative GAAP Valuation Methods

- "Modified (Preservation) Method
  - Based on *historic* cost
  - Historic cost is not reduced if the condition of the asset is preserved
  - Requires setting a measurable condition or performance standard (level of service)
  - Requires condition to be measured and disclosed at least every three years

Preserved historic cost
(renewal costs are expensed each year)

Non-GAAP Valuation Methods

- Depreciated replacement cost (DRC)
  - Uses estimated *replacement* cost rather than renewal or original cost
  - Optimized replacement identifies optimal solution costs rather than straight replacement cost
  - Deals at *asset, facility or system* level
  - Looks to long term life-cycle (e.g.,100 years)
  - Not recognized by GAAP in US



Replacement/Renewal Accounting

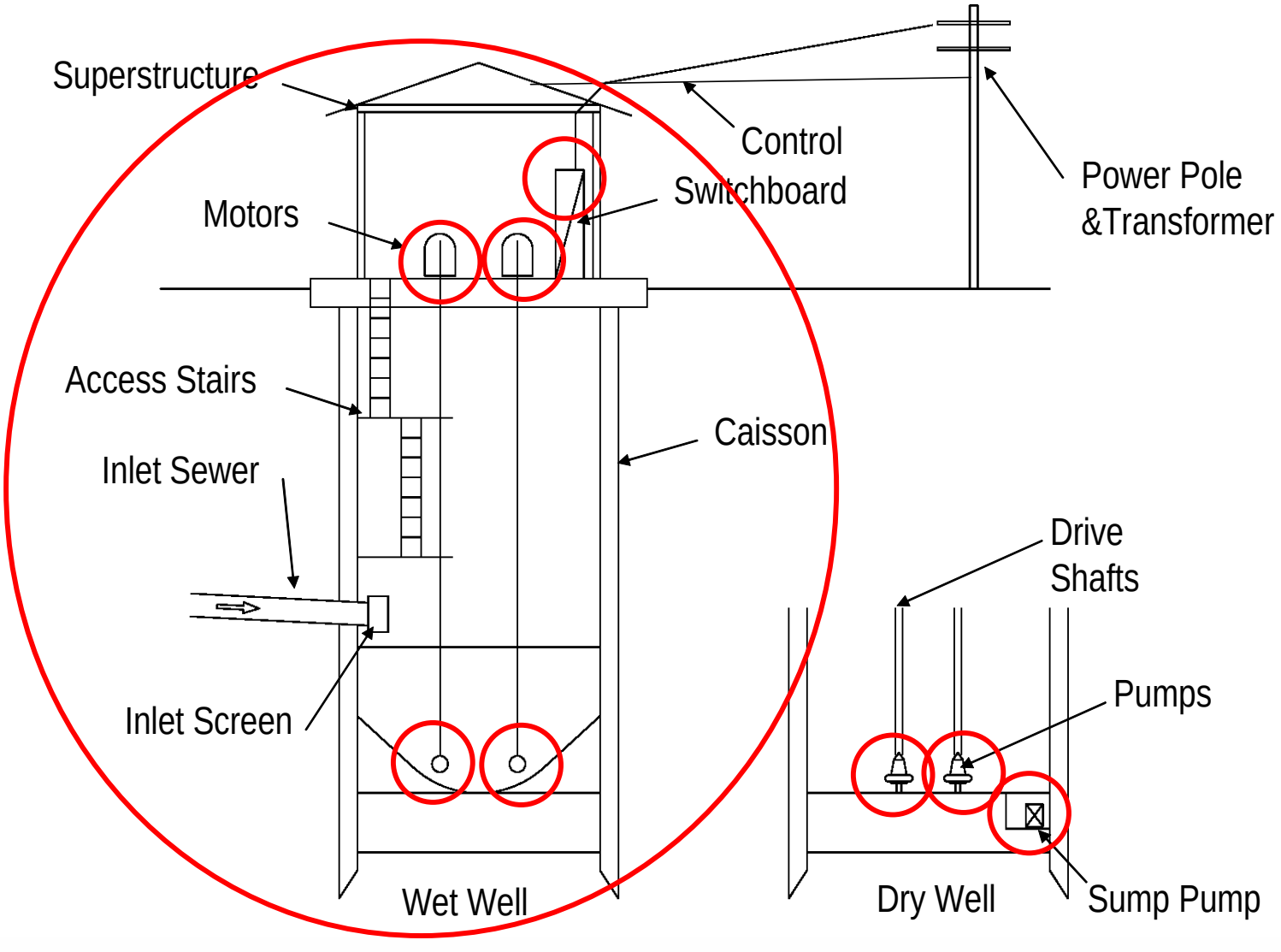
Perceived advantages of Replacement/Refurbishment Accounting

- ✓ Closely aligned to management of the asset (ie consistent with how the network is operated)
- ✓ Forward looking; put the emphasis on what needs to be done to keep the network up to scratch
- ✓ Discloses “”deferred”” maintenance

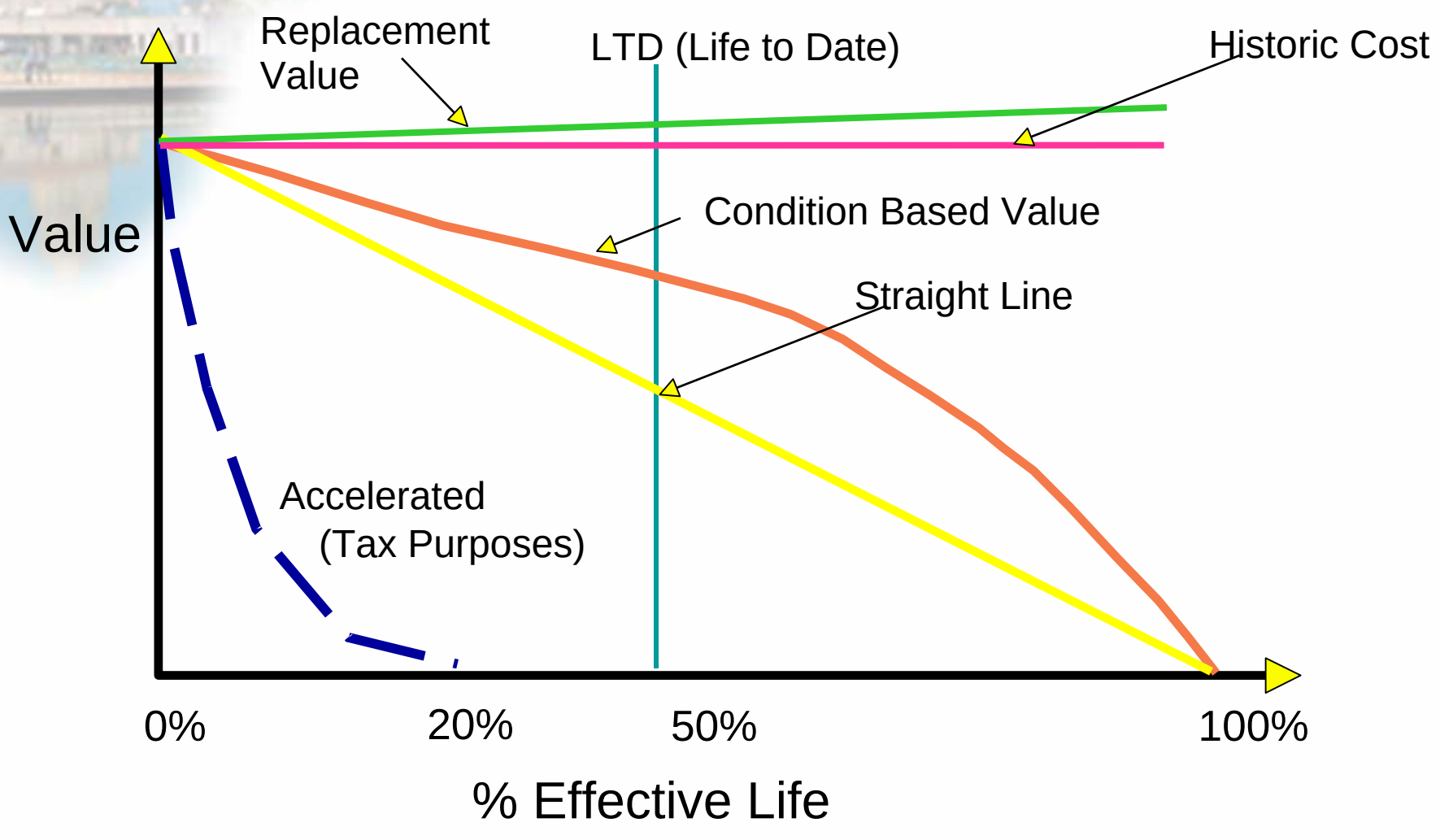
Perceived disadvantages of Replacement/Refurbishment Accounting

- X Doesn’t have authoritative GAAP support
- X No “source document” as definitive documentation of “value”
- X Hard to apportion between true renewals and augmentation - expenditures which increase capacity or service potential of the network
- X Can any network be in a ‘steady state’?
- X Variability in level of renewals (when does renewal become replacement?)
- X It’s hard to do

Refurbish Versus Replace



Depreciation – What Method?

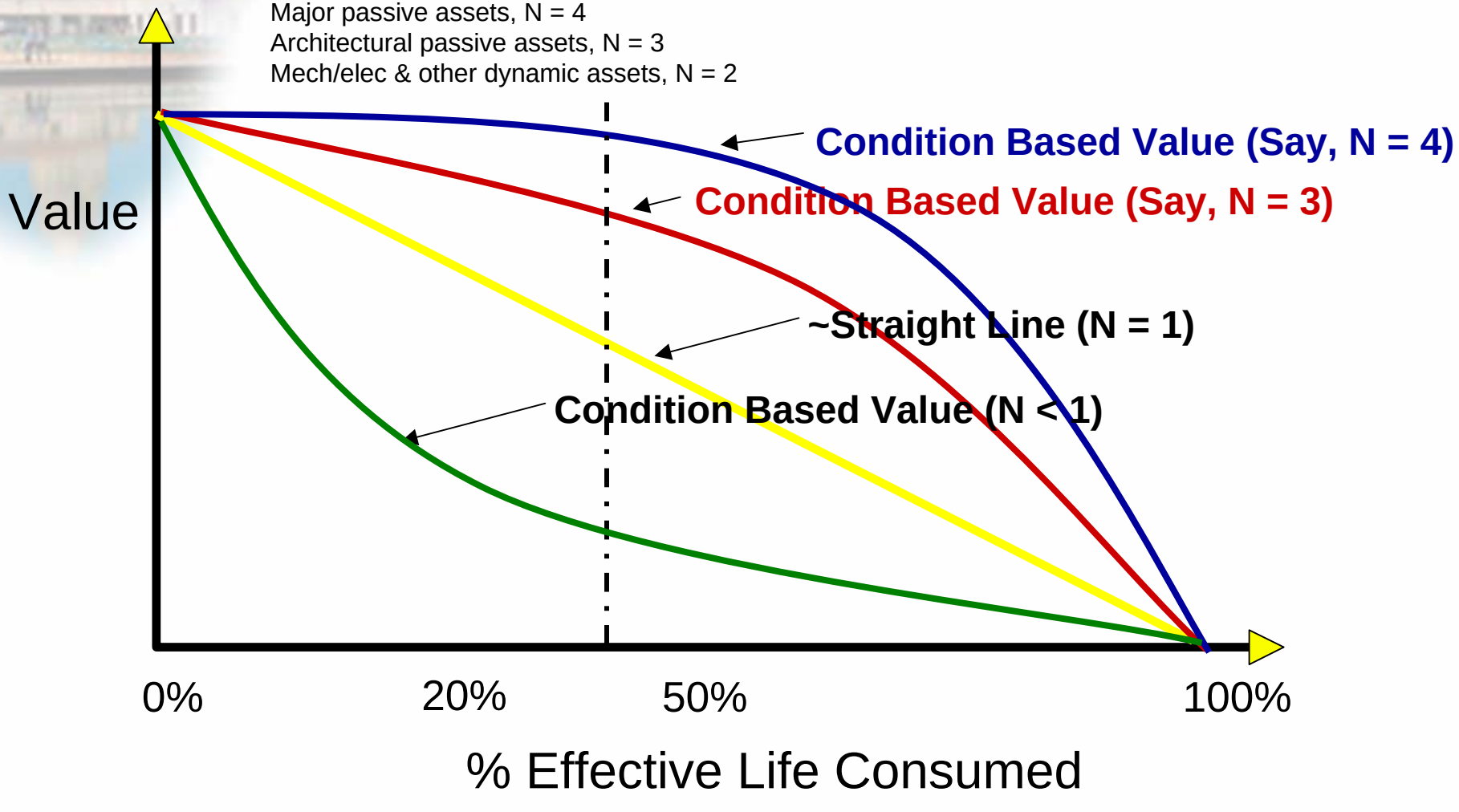


Condition-Based Depreciation

CB Depreciated Cost = (Life to date/estimated useful life)^N * Original Cost

Renewal cost = (% Effective Life Consumed)^N * Replacement Cost

Major passive assets, N = 4
Architectural passive assets, N = 3
Mech/elec & other dynamic assets, N = 2



Economic Life

Economic life:

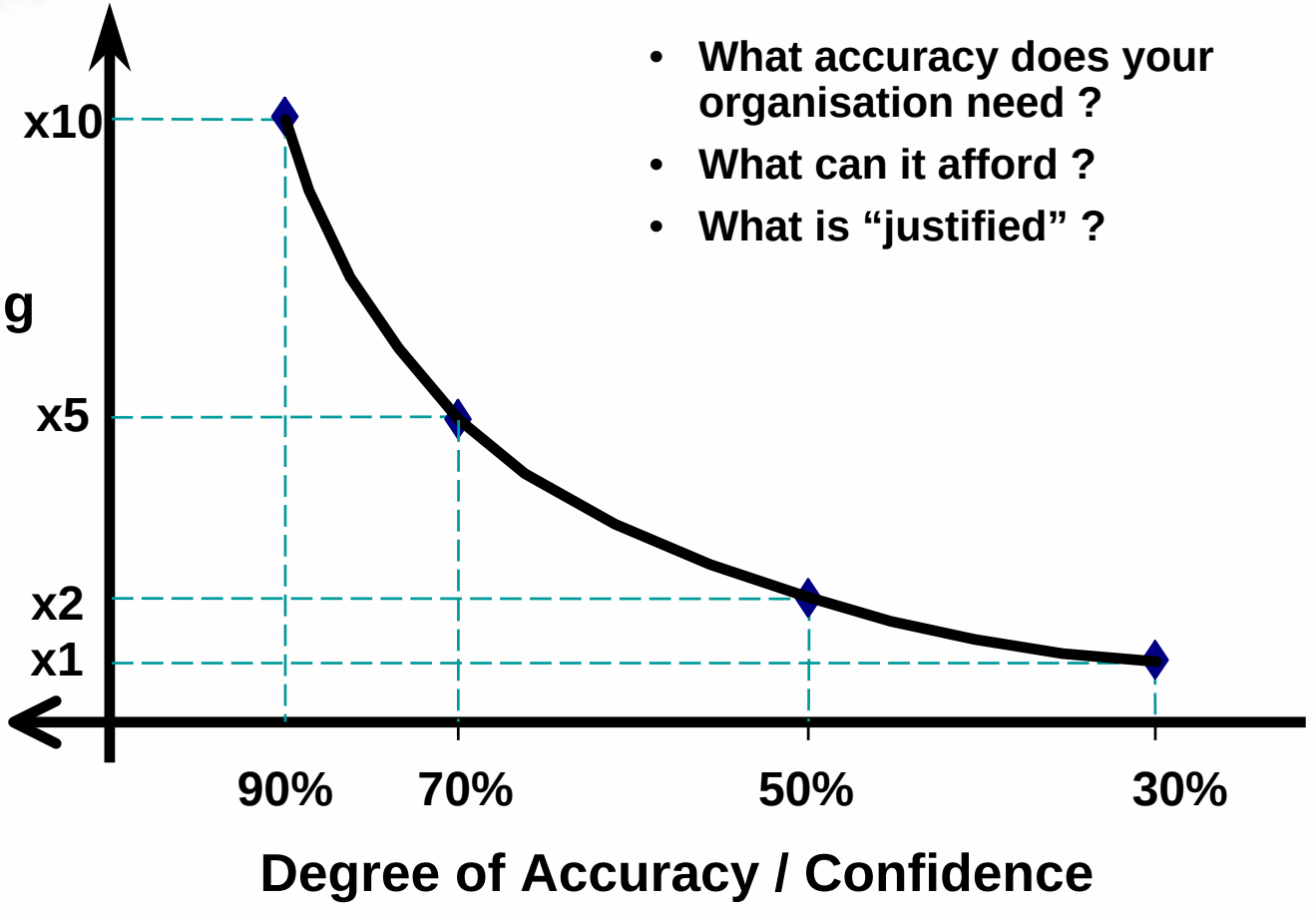
- The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular need.
- The economic life is, at the maximum, equal to the physical life, but obsolescence will ensure that the economic life is often less than the physical life.

Valuation Parameters

- Historic cost
- Asset age
- Condition
- Remaining useful (economic) life
- Replacement cost
- Deterioration profile
- Assessment of optimization (utilization/capacity)

Increasing accuracy

Cost Versus Accuracy



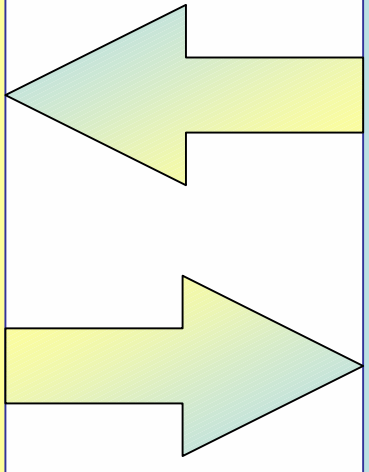
Cost Factor (of conducting valuation)

- **What accuracy does your organisation need ?**
- **What can it afford ?**
- **What is "justified" ?**

Which Valuation Technique?

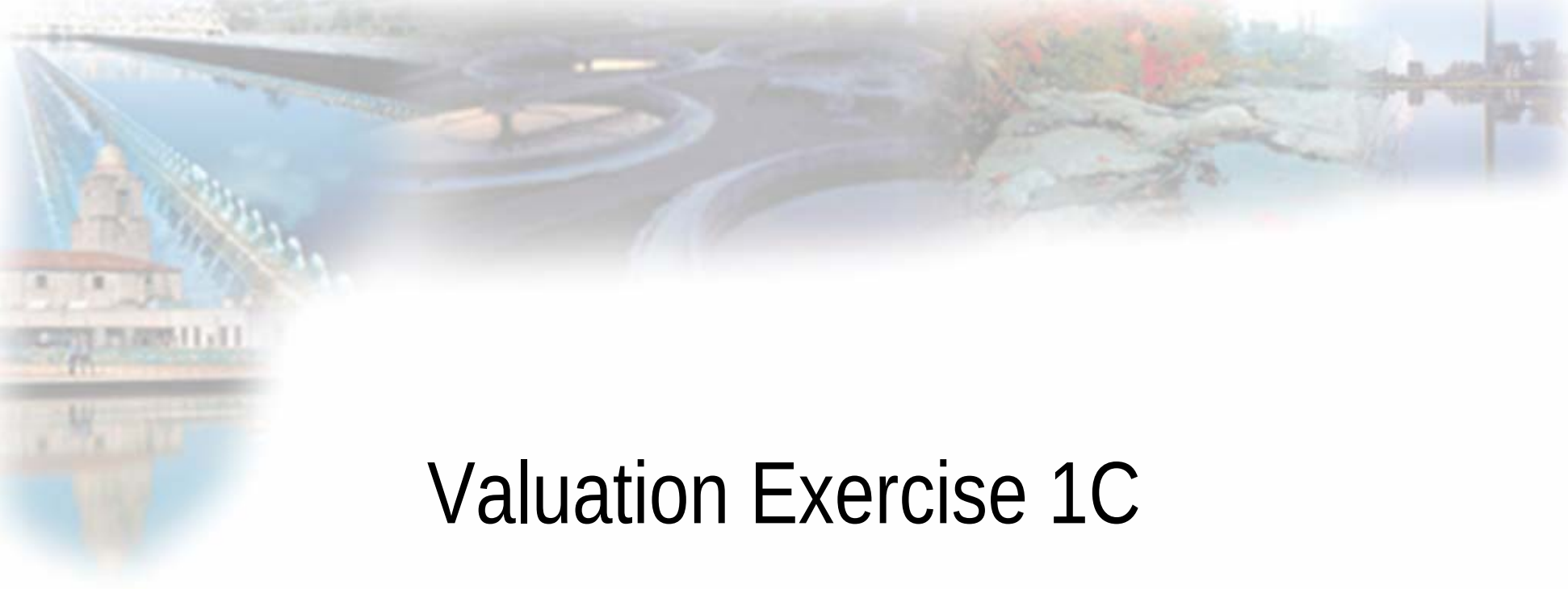
Financial Accounting

- Used for GASB reporting purposes
- Choice of:
  - Historic depreciation
  - Modified or "preservation" approach



Managerial Accounting

- For renewal and replacement analysis
- For long-term funding strategies including rate setting
- Choice of:
  - Condition-based renewal
  - Depreciated replacement



Valuation Exercise 1C

What is the “value” of my pump station?

Exercise Number 1c

- What is the current “book value” of the pump station?
- How much “depreciation reserve” has been accumulated so far? Do you think this is cash available to Tom to reinvest?
- How much depreciation expense is expected be “accumulated” over the life of the existing assets? Will this be enough to replace the assets?