

# Real Estate Connection presents:

Living Buildings and the Economics of  
Change by Stuart Cowan, Ph.D





**PERKINS & CO**

*Let's get there*

# Tangible Property Regulations Overview

**Trent Baeckl, CPA**  
**Tax Senior Manager**

December 5, 2013

@PerkinsCo



# Presentation Overview



- › Final “Repair” Regs
- › Net Investment Income Tax (NIIT) Update
- › 3.8% Medicare Surtax
- › Oregon Grand Bargain
- › Other Tax Tidbits





# **Tangible Property Regulations Overview**

# Presentation Overview



- › How did we get here?
- › What areas have changed?
- › What should I focus on?
- › How might cost segregation benefit me?
- › What are my must-dos before year-end?

# Legislative Background



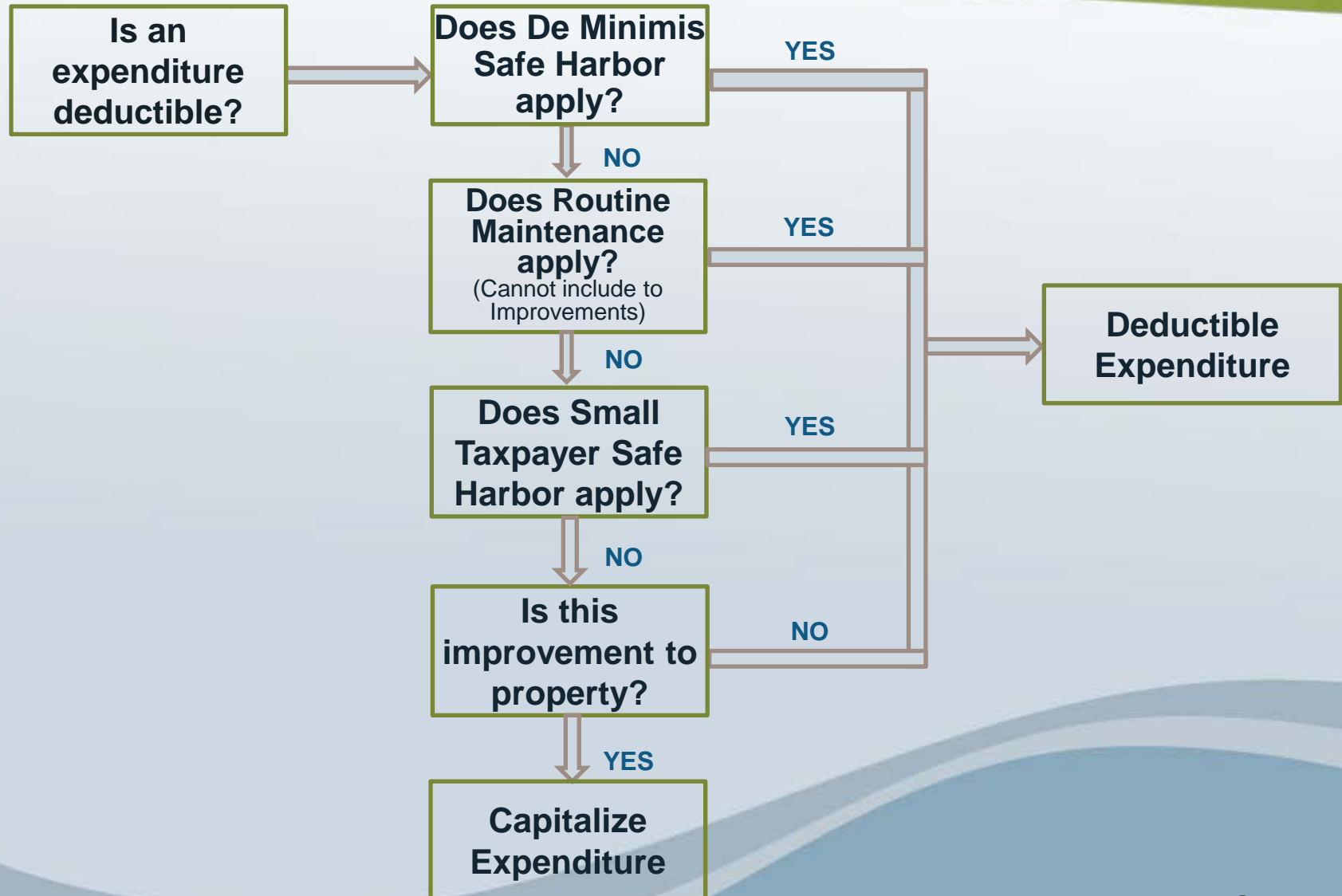
- › 08/18/06 – Proposed regs. issued
- › 03/07/08 – Re-proposed regs. issued
- › 12/23/11 – Temporary & proposed regs. issued
- › 11/20/12 – Notice extended effective date to 1/1/14
- › 09/13/13 – Final “repair” regs. issued under 263(a)  
& proposed “disposition” regs. issued  
under 162(a)
- › Before 12/31/13 – Final “disposition” regs &  
guidance on accounting method  
changes expected

# Major Areas Covered



- › Materials & supplies (M&S)
- › Repairs & maintenance (R&M)
- › Amounts paid for acquisition or production of tangible property
- › Capital expenditures (Unit of Property, or UOP)
- › Amounts paid for improvements to tangible property (BAR standards)

# Determining Deductibility Overview





# M&S - Definition



- › Tangible property used or consumed in normal business operations that is not inventory and:
  - Is a component acquired to maintain, repair, or improve a UOP owned or leased
  - Consists of fuel, lubricants, water and similar items expected to be consumed in 12 months or less
  - Is a UOP with an economic useful life of 12 months or less, beginning when UOP is used or consumed
  - Is a UOP with an acquisition cost of \$200 or less
  - Is identified in published guidance as M&S

# M&S - Treatment



## › General Rule

- Incidental M&S deductible when purchased
- Non-incidental M&S deductible when used or consumed

## › New Provisions

- Deduct any M&S in year purchased if safe harbor election is made
- Election to capitalize and depreciate M&S only for rotatable, temporary or emergency spare parts

# De Minimis Expensing Rule



## › Safe Harbor

- \$5,000 with AFS; \$500 without AFS
  - Transaction & additional costs
- \$200 for non-incidental M&S
- Written policy requirement
- Annual election

# Acquisition/Production of Property



## › Must capitalize:

- Inherently facilitative costs
- Incurred prior to in-service date
- Defend or perfect title to property
- Required under 263A (unicap rules)

## › Can expense:

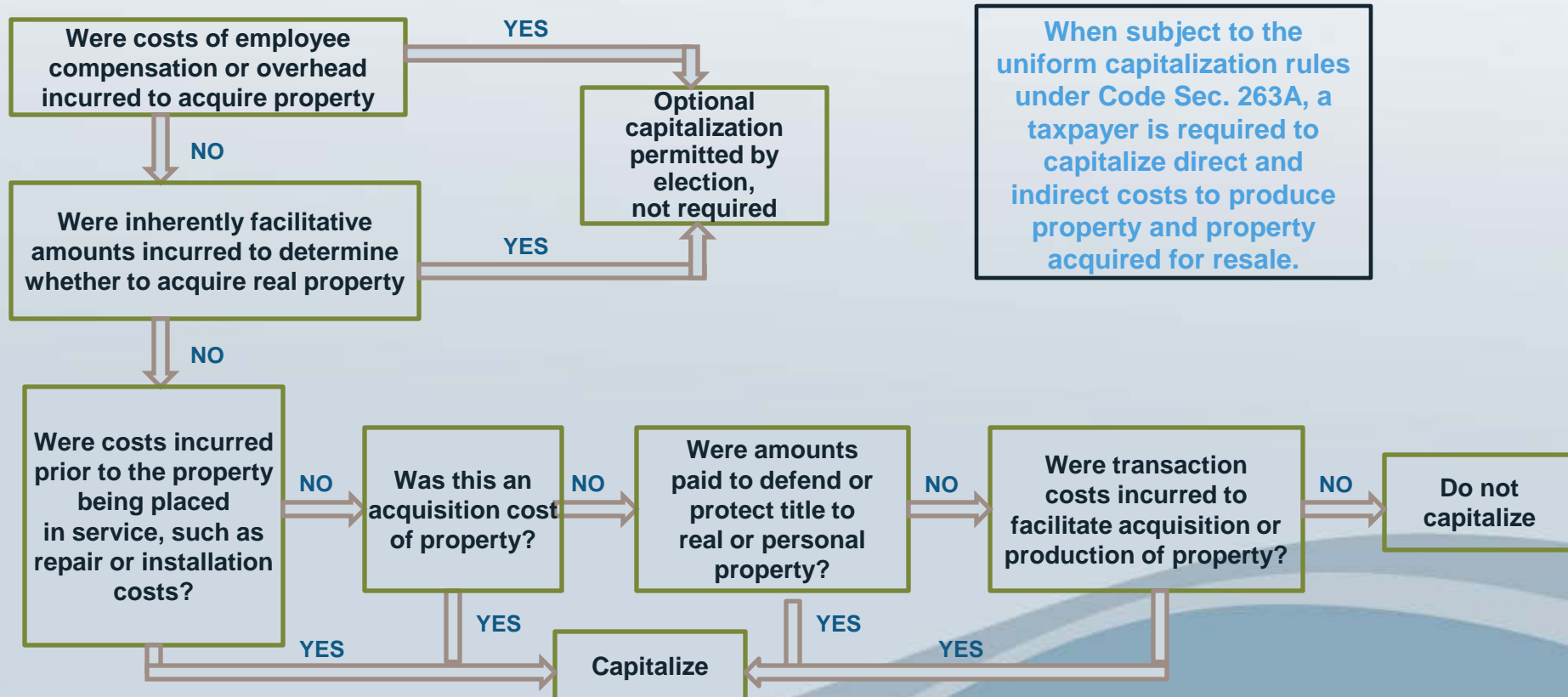
- Internal labor and overhead costs
- Investigatory costs (“whether and which” for real property only)



# Acquisition or Production of Property



- › A taxpayer must capitalize costs incurred to acquire or produce a unit of real or personal property.



# UOP – Other Property



- › General Rule – Functional Interdependence
  - A single UOP when the placing in service of one component is dependent on another component
- › Plant Property
  - UOP is divided into smaller units comprised of each component that performs a discrete and major function or operation within the functionally interdependent machinery/equipment
- › Network Assets
  - UOP is determined by facts and circumstances or as provided by published guidance

# UOP – Buildings



## › Nine Building System Components

- Building Structure (Shell)
- HVAC
- Plumbing
- Gas Distribution
- Electrical
- Elevators
- Escalators
- Fire Protection
- Security Systems

# UOP – Buildings

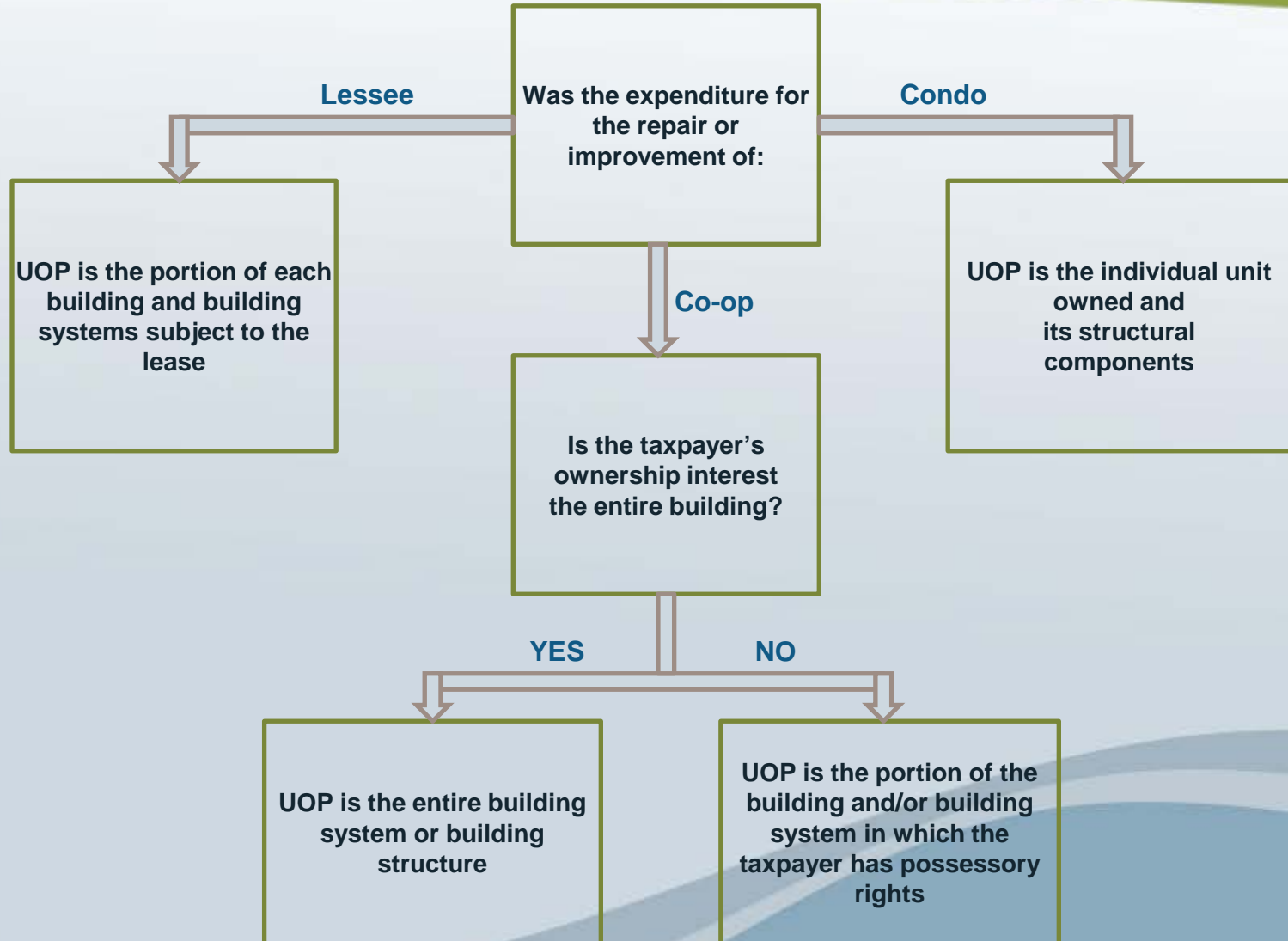


## Building Unit(s) of Property and Common Components

Building Structure	HVAC	Plumbing	Gas Distribution	Electrical	Elevators	Escalators	Fire Protection	Security Systems
<ul style="list-style-type: none"><li>• Roof</li><li>• Walls</li><li>• Floors</li><li>• Ceilings</li><li>• Foundation</li></ul>	<ul style="list-style-type: none"><li>• Motors</li><li>• Compressors</li><li>• Boilers</li><li>• Furnace</li><li>• Chillers</li><li>• Pipes</li><li>• Ducts</li><li>• Radiators</li></ul>	<ul style="list-style-type: none"><li>• Pipes</li><li>• Drains</li><li>• Valves</li><li>• Sinks</li><li>• Bathtubs</li><li>• Toilets</li><li>• Water &amp; Sewer Collection Equipment</li><li>• Water Utility Equipment</li></ul>	<ul style="list-style-type: none"><li>• Pipes</li><li>• Gas Utility Equipment</li></ul>	<ul style="list-style-type: none"><li>• Wiring</li><li>• Outlets</li><li>• Junctions</li><li>• Lighting</li><li>• Fixtures &amp; Connector</li><li>• Electrical Utility Equipment</li></ul>	<ul style="list-style-type: none"><li>• Elevator Boxes</li><li>• Control Equipment</li><li>• Cables &amp; Movement Equipment</li></ul>	<ul style="list-style-type: none"><li>• Rails</li><li>• Steps</li><li>• Supporting Equipment</li><li>• Controls</li></ul>	<ul style="list-style-type: none"><li>• Sensing &amp; Detection Devices</li><li>• Computer Controls</li><li>• Sprinkler Heads &amp; Mains</li><li>• Piping &amp; Plumbing</li><li>• Alarms</li><li>• Control Panels</li><li>• Signage</li></ul>	<ul style="list-style-type: none"><li>• Window &amp; Door Locks</li><li>• Security Cameras</li><li>• Recorders</li><li>• Monitors</li><li>• Motion Detectors</li><li>• Security Lighting</li><li>• Alarms</li><li>• Entry Access</li></ul>



# UOP – Leased or Condo Property



# UOP Examples – Real Property



Real Property	Expenditure	UOP
Retail store – stand-alone	Store refresh – lighting replacement	Electrical system
Retail store - shopping mall (leased space)	Store refresh – lighting replacement	Leased portion of building electrical system
Office – owned building	Remove conference room wall	Building structure
Office – leased space	Remove conference room wall	Building structure within leased space
Office condo	HVAC unit replacement	Leased portion of building HVAC system
Apartment building	Single unit heat/air replacement	Building HVAC system

# UOP Examples – Other Property



Personal Property: Non-Building	Expenditure	UOP
Restaurant oven	Burner replacement	Oven
Garbage truck	Engine repair / replacement	Truck
Apartment unit furnishings	New carpet for individual unit	Carpet
Donut bakery manufacturing line – interconnected mixers, ovens, conveyers, loaf slicer, packaging	Knife replacement / sharpening	Slicer component
Retail donut store bakery – interconnected mixers, ovens, conveyers, loaf slicer, packaging	Knife replacement/sharpening	Entire baking line
Power plant – coal pulverizers, boilers, turbine, and a generator	Boiler tube replacement	Boiler – Refer to Industry Guidance Rev. Proc. 2013-24

# Repairs & Maintenance



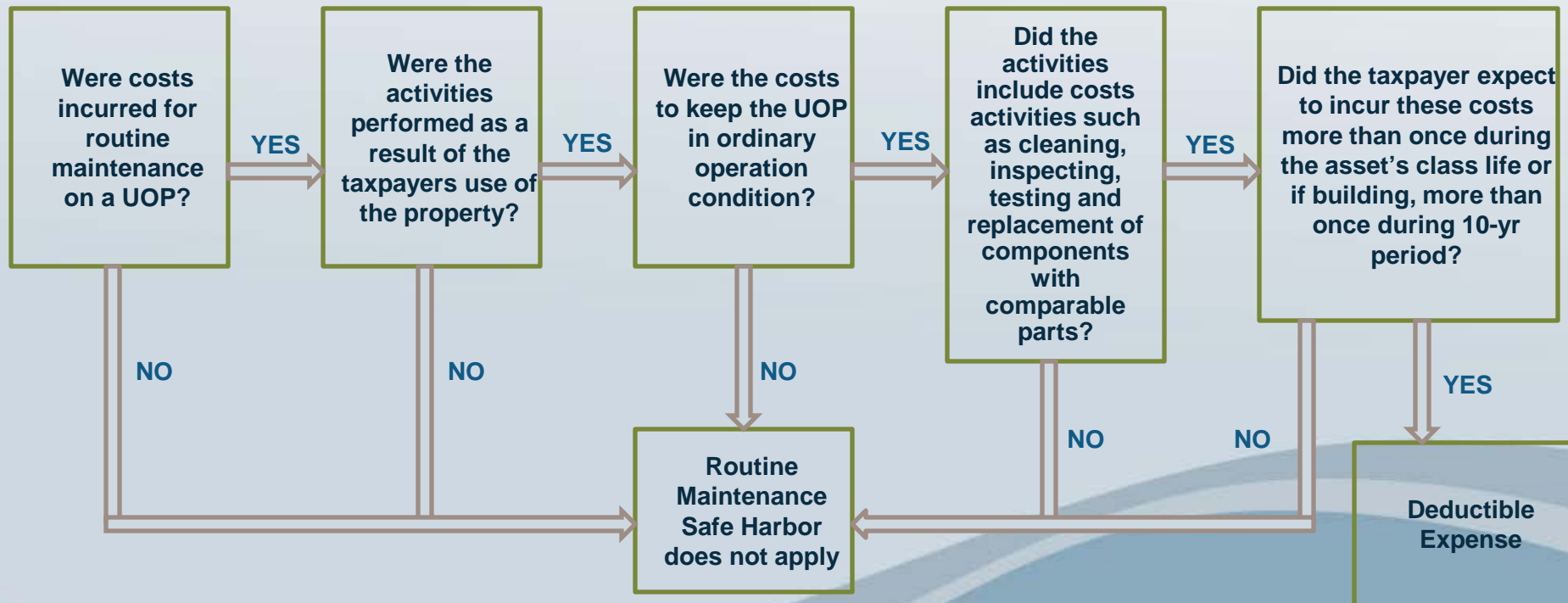
- › Expense allowed for recurring activities expected to be performed as a result of use to keep UOP in ordinary efficient operating condition
- › Safe Harbor for Routine Maintenance
  - Expected more than once over ADS class life
    - 10 years for buildings
  - Small taxpayer safe harbor for buildings
    - Building by building test
  - N/A for network assets



# Routine Maintenance Safe Harbor



- › Taxpayers are permitted to deduct costs as routine maintenance under this safe harbor if the following tests are met:





- › Does not apply to:
  - Betterments
  - Adaptations
  - Restorations
  - Network assets
  - Certain rotatable spare parts
- › Election to follow book treatment

# Improvement Standards



- › Betterments – capitalize if:
  - Pre-existing material condition or defect is corrected
  - Material addition or expansion
  - Reasonably expected to materially increase:
    - Productivity
    - Efficiency
    - Strength
    - Quality
    - Output

# Improvement Standards



- › Adaptations – capitalize if:
  - New or different use from intention when originally placed in service



# Improvement Standards



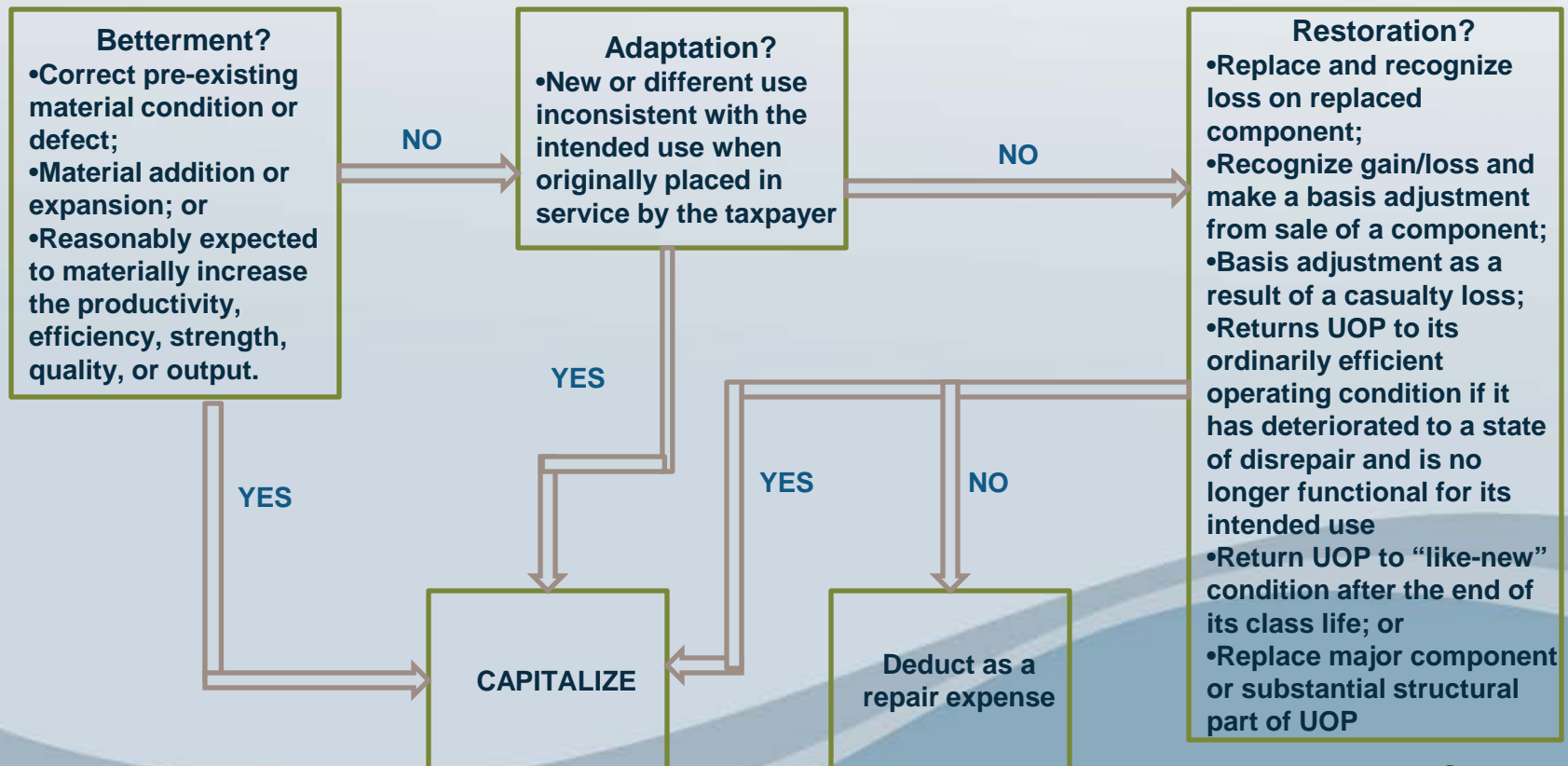
## › Restorations – capitalize if:

- Returns UOP to ordinary efficient operating condition if deteriorated to state of disrepair and no longer can function for intended use
- Returns UOP to “like-new” condition at the end of its ADS class life
- Replaces major component or substantial structural part of UOP
- Replaces UOP where loss recognized on replaced component

# Improvement Standards



- › Apply the following tests to the UOP to determine whether the expenditure is a capital expenditure:



# Dispositions - Definition



- › Asset's ownership transferred or permanently withdrawn from use in business or for production of income
  - Sold or exchanged
  - Retired
  - Physically abandoned
  - Destroyed/casualty
  - Scrap
  - Involuntary conversion
  - Partial disposition (new proposed regs)

# Partial Disposition Election



- › Claim loss upon the disposition of a structural component (or portion thereof) of a building without identifying the component as an asset before the disposition
- › Methods to determine basis of partial disposition
  - Discounted replacement cost
  - Pro-rata replacement cost
  - Cost segregation

# Partial Disposition Election



## › Proposed Regulations on Partial Dispositions

- Election made in year disposition occurs by writing off the remaining net tax basis at time of disposition
- Use it or lose it – depreciation of “ghost” asset
- One-time catch up to write off “ghost” assets currently on depreciation schedules – may early adopt for 2012 or 2013



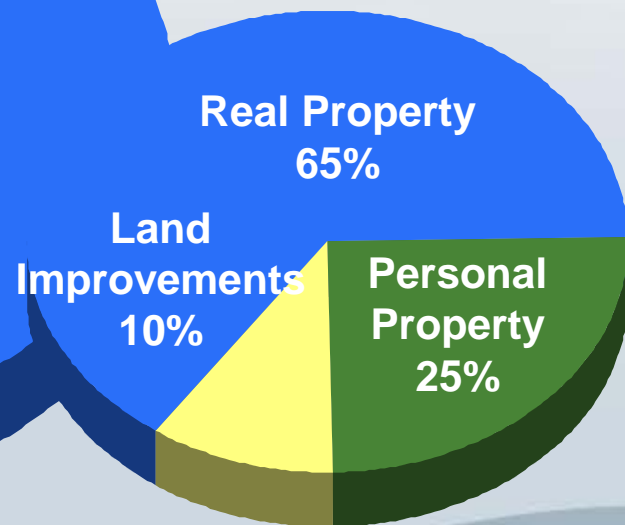
# Cost Segregation



**Before**



**After**



# Year-End Musts



- › Review/revise, or establish, written capitalization policy before 1/1/14
- › Review depreciation schedules for “ghost assets” and partial disposition opportunities
- › Review R&M policy & tracking
- › Review M&S policy & tracking
- › Consider early adoption if favorable

# Questions?



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**503-221-0336**



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# Industry Tax Updates

**Tim Kalberg, CPA**  
**Shareholder**

December 5, 2013

@PerkinsCo



# Tax Prep 2013





# Net Investment Income Tax (NIIT)



## Day of Reckoning

Starting in 2013: **3.8%**



**Surtax**

- Imposed on certain investment income of high-income tax payers
- Even more surprising, it goes to the General Fund

# Net Investment Income Tax (NIIT)



## Who

Individual taxpayer threshold amounts:

**Single Taxpayer**



**\$200,000**

**Married Filing  
Jointly**



**\$250,000**

**Married Filing  
Separately**



**\$125,000**

# Net Investment Income Tax (NIIT)



## How

For individuals the 3.8% surtax will be imposed on the lesser of:

- Net investment income for the tax year, or
- The amount by which the modified adjusted gross income (MAGI) exceeds the threshold amount in that year

# What IS investment income?



## Net investment income *includes* the following:

- › Interest, dividends, royalties, annuities
- › Net capital gains derived from the disposition of property (other than property held in an active trade or business)

Long-term capital gains	15.0%	23.8%
Qualified dividends	15.0%	23.8%

- › Income derived from all passive activities

## Rental Income



# What IS investment income?



Net investment income **does not** include the following:

- › Wages or salary
- › Active trade or business income
- › Distributions from IRAs or qualified retirement plans
- › Income from tax-exempt municipal bonds

**Earnings Statement**

CO. FILE DEPT. CLOCK NUMBER  
ABC 120543 123456 12345 00000000 1

ACME SUPPLIES CORP.  
475 KNAPP AVENUE  
ANYTOWN, USA 10101

Period ending: 12/19/2000  
Pay date: 12/26/2003

Social Security Number: 999-19-9999  
Taxable Marital Status: Married  
Exemptions/Allowances:  
Federal: 3, \$25 Additional Tax  
State: 2  
Local: 2

**JANE HARPER**  
101 MAIN STREET  
ANYTOWN, USA 12345

Earnings	rate	hours	this period	year to date
Regular	10.00	32.00	320.00	16,640.00
Overtime	15.00	1.00	15.00	780.00
Holiday	10.00	8.00	80.00	4,160.00
Tuition			37.43*	1,946.80
<b>Gross Pay</b>			<b>\$ 452.43</b>	23,526.80

Deductions	Statutory		
Federal Income Tax	- 40.60		2,111.20
Social Security Tax	- 28.05		1,458.60
Medicare Tax	- 6.56		341.12
NY State Income Tax	- 8.43		438.36
NYC Income Tax	- 5.94		308.88
NY SUI/SDI Tax	- 0.60		31.20
<b>Other</b>			
Road	- 5.00		100.00

Other Benefits and Information	this period	total to date
Group Term Life	0.51	27.00
Loan Amt Paid		840.00
Vac Hrs		40.00
Sick Hrs		16.00
Title	Operator	

**Important Notes**  
EFFECTIVE THIS PAY PERIOD YOUR REGULAR HOURLY RATE HAS BEEN CHANGED FROM \$8.00 TO \$10.00 PER HOUR.

WE WILL BE STARTING OUR UNITED WAY FUND



# Recent NIIT Guidance



## ***Final Regs issued 11/26/2013:***

- › Finalized 2012 proposed regs
- › Self-charged interest not subject
- › Self-charged rental income not subject
- › Net losses now allowed
- › NOLs now allowed in certain situations
- › Regrouping only allowed at individual level in *first year subject to tax*
  - No regrouping at entity level

# Recent NIIT Guidance



## ***Final Regs (cont.):***

- › RE professional safe harbor (annual test)
  - Must meet RE professional tests
    - 750 hours, AND
    - More than 50%
  - Must materially participate in rental activities
    - 500 hours test
  - Importance of aggregation election?



# Recent NIIT Guidance



## ***Proposed Regs:***

- › Revised rules regarding calculation of net gain subject to NIIT from the disposition of S corporation stock or partnership/LLC interests
- › Treatment of guaranteed payments for use of capital
- › Treatment of certain payments to retiring or deceased partners
- › Certain capital loss carryovers



# Medicare Surtax



- › Applied to wages & self-employment income in excess of:
  - Single taxpayers > \$200,000
  - MFJ taxpayers > \$250,000
- › Employer is required to withhold from wages in excess of \$200,000
- › Self-employment loss does not reduce amount of tax

# NIIT/Medicare Surtax Planning



- › NIIT is deemed an income tax so no part of it is deductible for income tax purposes
- › NIIT is subject to estimated tax requirements
- › What about S corporations?
  - Can potentially avoid both NIIT & Medicare Surtax if:
    - Pay reasonable salaries, AND
    - Shareholder materially participates in the business

# NIIT/Medicare Surtax Planning



- › What about partnerships/LLCs?
  - Unlike S corporations, likely hard to avoid both NIIT & Medicare Surtax
- › What about trusts?
  - NIIT applies to certain trusts (and estates)
    - Irrevocable or non-grantor trusts generally subject
    - Grantor trusts not subject (but grantor is)
    - Most charitable trusts are not subject
  - Significantly lower threshold amount (**\$11,950 for 2013**)



# NIIT/Medicare Surtax Planning



Form **8960** Net Investment Income Tax—  
Individuals, Estates, and Trusts

Department of the Treasury  
Internal Revenue Service (IRS)

OMB No. 1545-0047  
**2013**  
Attachment  
Sequence No. 72

► Attach to Form 1040 or Form 1041.  
► Information about Form 8960 and its separate instructions is at [www.irs.gov/form8960](http://www.irs.gov/form8960).

Name(s) shown on Form 1040 or Form 1041 \_\_\_\_\_ Your social security number or EIN \_\_\_\_\_

**Part I Investment Income** ☐ Section 6013(g) election (see instructions)  
☐ Regulations section 1.1411-10(g) election (see instructions)

1	Taxable interest (Form 1040, line 8a; or Form 1041, line 1)	1
2	Ordinary dividends (Form 1040, line 9a; or Form 1041, line 2a)	2
3	Annuities from nonqualified plans (see instructions)	3
4a	Rental real estate, royalties, partnerships, S corporations, trusts, etc. (Form 1040, line 17; or Form 1041, line 5)	4a
4b	Adjustment for net income or loss derived in the ordinary course of a non-section 1411 trade or business (see instructions)	4b
4c	Combine lines 4a and 4b	4c
5a	Net gain or loss from disposition of property from Form 1040, combine lines 13 and 14; or from Form 1041, combine lines 4 and 7	5a
5b	Net gain or loss from disposition of property that is not subject to net investment income tax (see instructions)	5b
5c	Adjustment from disposition of partnership interest or S corporation stock (see instructions)	5c
5d	Combine lines 5a through 5c	5d
6	Changes to investment income for certain CFCs and PFICs (see instructions)	6
7	Other modifications to investment income (see instructions)	7
8	Total investment income. Combine lines 1, 2, 3, 4c, 5d, 6, and 7	8

**Part II Investment Expenses Allocable to Investment Income and Modifications**

9a	Investment interest expenses (see instructions)	9a
9b	State income tax (see instructions)	9b
9c	Miscellaneous investment expenses (see instructions)	9c
9d	Add lines 9a, 9b, and 9c	9d
10	Additional modifications (see instructions)	10
11	Total deductions and modifications. Add lines 9d and 10	11

**Part III Tax Computation**

12	Net investment income. Subtract Part II, line 11 from Part I, line 8. Individuals complete lines 13–17. Estates and trusts complete lines 18a–21. If zero or less, enter -0-	12
<b>Individuals:</b>		
13	Modified adjusted gross income (see instructions)	13
14	Threshold based on filing status (see instructions)	14
15	Subtract line 14 from line 13. If zero or less, enter -0-	15
16	Enter the smaller of line 12 or line 15	16
17	Net investment income tax for individuals. Multiply line 16 by 3.8% (.038). Enter here and on Form 1040, line 60	17
<b>Estates and Trusts:</b>		
18a	Net investment income (line 12 above)	18a
18b	Deductions for distributions of net investment income and deductions under section 642(c) (see instructions)	18b
18c	Undistributed net investment income. Subtract line 18b from 18a (see instructions)	18c
19a	Adjusted gross income (see instructions)	19a
19b	Highest tax bracket for estates and trusts for the year (see instructions)	19b
19c	Subtract line 19b from line 19a. If zero or less, enter -0-	19c
20	Enter the smaller of line 18c or line 19c	20
21	Net investment income tax for estates and trusts. Multiply line 20 by 3.8% (.038). Enter here and on Form 1041, Schedule G, line 4	21

For Paperwork Reduction Act Notice, see your tax return instructions. Cat. No. 59474M Form **8960** (2013)

## Draft IRS Form 8960



# Uncertain Future



- › 2014 & beyond...
  - Significant tax reform coming?
  - What about “tax extenders?”

# Tax Extenders in Limbo?



<b>Federal Tax Provision</b>	<b>2013</b>	<b>2014</b>
<b>Bonus Depreciation</b>	<b>50%</b>	<b>0%</b>
<b>Section 179 Max Limitation</b>	<b>\$500,000</b>	<b>\$25,000</b>
<b>Certain Qualified Real Property Depreciable Life</b>	<b>15 Yrs</b>	<b>39 Yrs</b>
<b>Primary Residence COD Exclusion</b>	<b>Yes</b>	<b>No</b>
<b>Section 179D Deduction</b>	<b>Yes (up to \$1.80/sf)</b>	<b>No</b>
<b>New Markets Tax Credit</b>	<b>Yes</b>	<b>No</b>
<b>Section 45L Credit (Energy Efficient New Homes)</b>	<b>Yes (up to \$2,000 per home)</b>	<b>No</b>
<b>Nonbusiness Energy Credit</b>	<b>Yes (up to \$500)</b>	<b>No</b>
<b>State Sales Tax Deduction</b>	<b>Yes</b>	<b>No</b>

# Federal Estate & Gift Tax



## Increased Gifting Opportunities

Estate & Gift Tax Regime	2013	2014
Top Rate	40.0%	40.0%
Lifetime Exemption	\$5,250,000	\$5,340,000
Annual Gift Tax Exemption	\$14,000	\$14,000



# Oregon Grand Bargain



**For tax years beginning in 2015 and beyond the following rates on pass-through income apply to qualifying S Corporations, Partnerships and LLCs (multi-member):**

Pass-through Income	Tax Rate
Up to \$250,000	7.0%
\$250,001 - \$500,000	7.2%
\$500,001 - \$1,000,000	7.6%
\$1,000,001 - \$2,500,000	8.0%
\$2,500,001 - 5,000,000	9.0%
Over \$5,000,000	9.9%





## Who qualifies for the reduced rates?

- › The income is non-passive under federal law
- › Rental income would normally **NOT** qualify, except to a materially participating real estate professional
- › The business employs (as a W-2 employee) at least one non-owner in what is defined as a full-time capacity
  - At least 30 hours per week and 1,200 hours per year, only counting 30 hour weeks)

# Oregon Grand Bargain



## And

- › New rates do not apply to single member LLCs or sole proprietorships
- › Non-resident owners must file a non-resident individual tax return
  - May not join in filing an Oregon composite return
- › Taxpayer may elect out of the reduced rates
  - Election out is irrevocable and must be made on originally filed return



# Local Taxes



## Portland/Multnomah County Update

- › Owner's Compensation Deduction
  - **2013** - \$90,500
  - **2014** - \$100,000

# Questions?



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# Appendix



- › 3.8% NIIT Examples
- › 0.9% Medicare Surtax Examples



# NIIT Example



## Married Filing Jointly:

### Husband and wife, filing jointly

Earn **\$200,000** in salaries

Plus **\$150,000** of net investment income  
for **\$350,000** of total MAGI

The **3.8%** surtax applies to \$100,000 of income **since it is the lesser** of \$150,000 of net investment income or the excess over the MAGI threshold of \$250,000.



# NIIT Example



## Surtax is gross, not net tax:

### Single filer

Earns **\$2,200,000** MAGI (all investment income)  
Less **\$1,000,000** Charitable contribution  
Less **\$1,100,000** Medical expenses  
TI **\$100,000**



The **3.8%** surtax applies to \$2,000,000 of income **since it is the lesser** of \$2,200,000 of net investment income or the excess over the MAGI threshold of \$200,000.

# 0.9% Medicare Tax



## Case One

Single taxpayer with *high* wages and S/E loss

Wages	\$300,000
Less partnership loss	<u>\$60,000</u>
Total S/E income	\$240,000

Medicare tax is \$900

$\$300,000 \text{ W-2} - \$200,000 \text{ threshold} \times 0.9\%$

# 0.9% Medicare Tax



## Case Two

Single taxpayer with **low** wages and **high** S/E income

Wages	\$ 20,000
Partnership income	+ <u>\$280,000</u>
Total S/E income	\$300,000

**Medicare tax is \$900**

(\$280,000 partnership income - \$180,000

Threshold (\$200,000 threshold - \$20,000 wages)

X 0.9%

# Living Buildings and the Economics of Change

Real Estate Connection – December 5, 2013

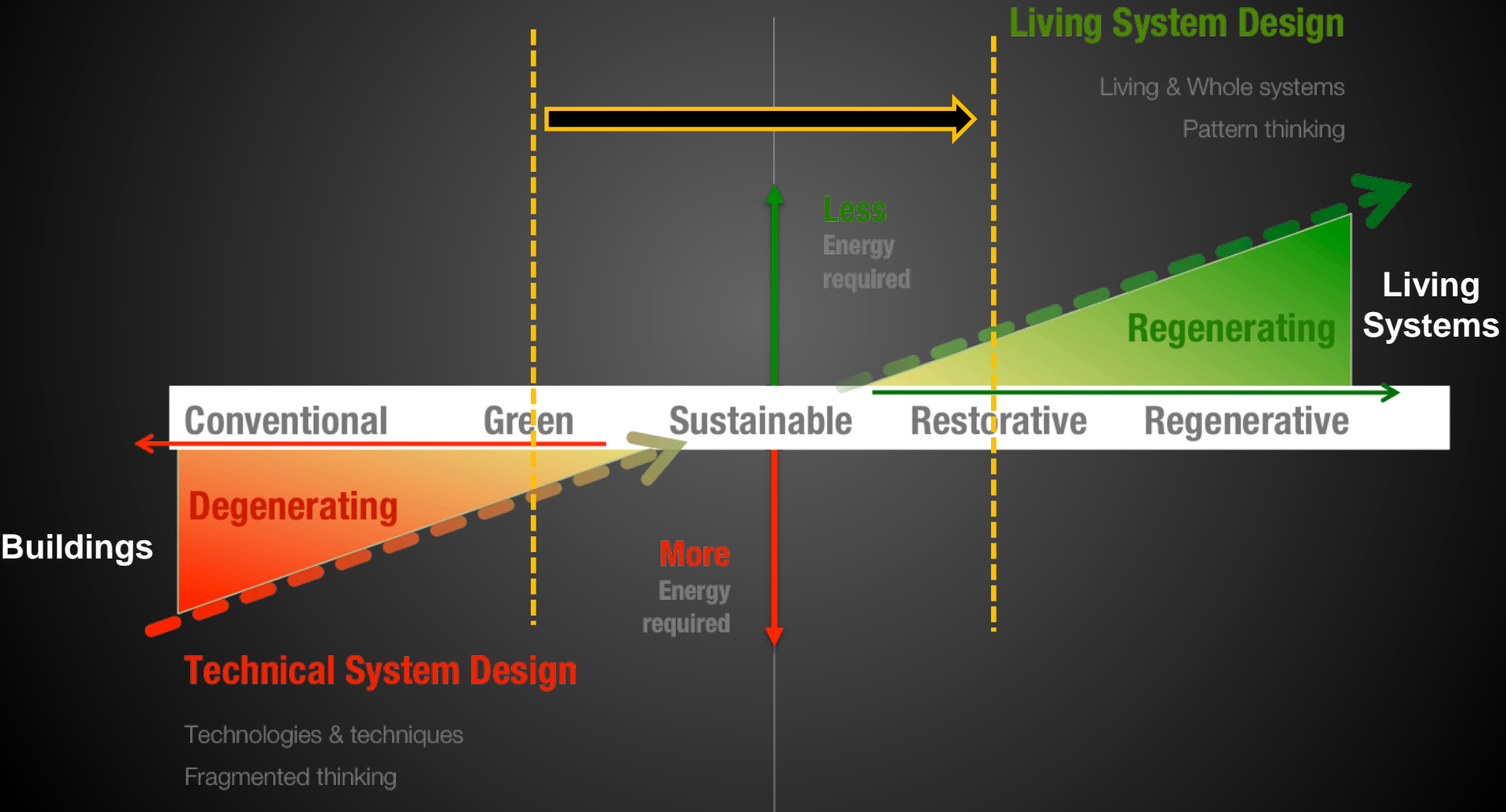
Stuart Cowan, Ph.D.  
Partner, Autopoiesis LLC



autopoiesis



# Trajectory of Sustainable Design





# Living Building Challenge

Site  
Water  
Energy  
Health  
Materials  
Equity  
Beauty

**BULLITT CENTER**  
SEATTLE, WASHINGTON

COMPLETED: 2013

PRIMARY BUILDING TYPE:  
COMMERCIAL OFFICE

PROJECT SIZE: 50,000 SF





CENTRE FOR INTERACTIVE  
RESEARCH ON SUSTAINABILITY  
VANCOUVER, BC, CANADA

COMPLETED: 2011

PRIMARY BUILDING TYPE:  
RESEARCH FACILITY

PROJECT SIZE: 59,000 SF



UNIVERCITY CHILDCARE AT SIMON  
FRASER UNIVERSITY

VANCOUVER, BC, CANADA

COMPLETED: 2011

PRIMARY BUILDING TYPE:  
CHILDCARE

PROJECT SIZE: 4,700 SF





VANDUSEN BOTANICAL GARDEN  
VANCOUVER, BC, CANADA

COMPLETED: 2011

PRIMARY BUILDING TYPE:  
VISITOR CENTER

PROJECT SIZE: 24,000 SF



# OKANAGAN COLLEGE CENTER OF EXCELLENCE

PENTICTON, BC, CANADA

COMPLETED: 2011

PRIMARY BUILDING TYPE:  
UNIVERSITY CLASSROOM

PROJECT SIZE: 75,000 SF







A MODEL OF A LIVING FUTURE

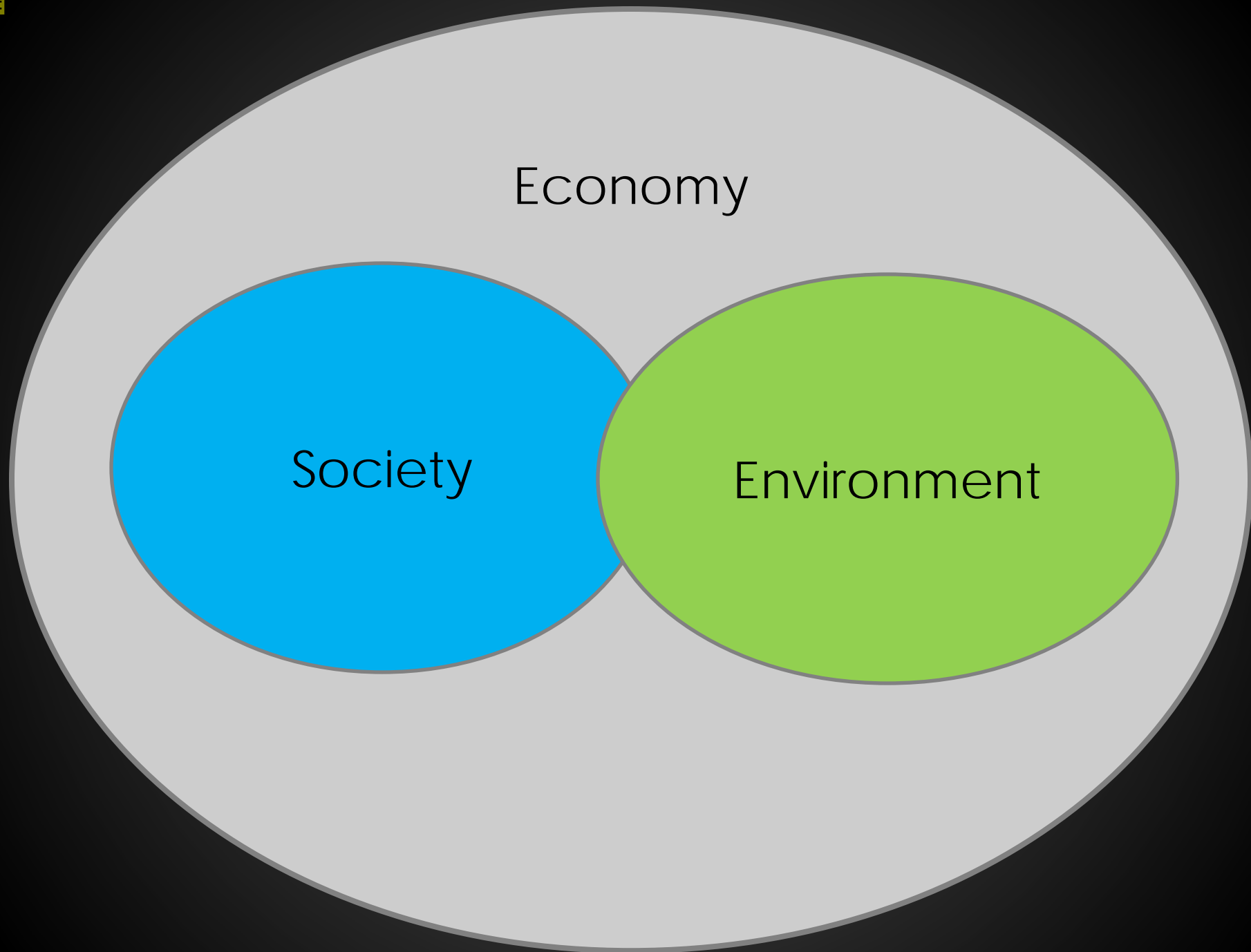


# THE ECONOMICS OF CHANGE

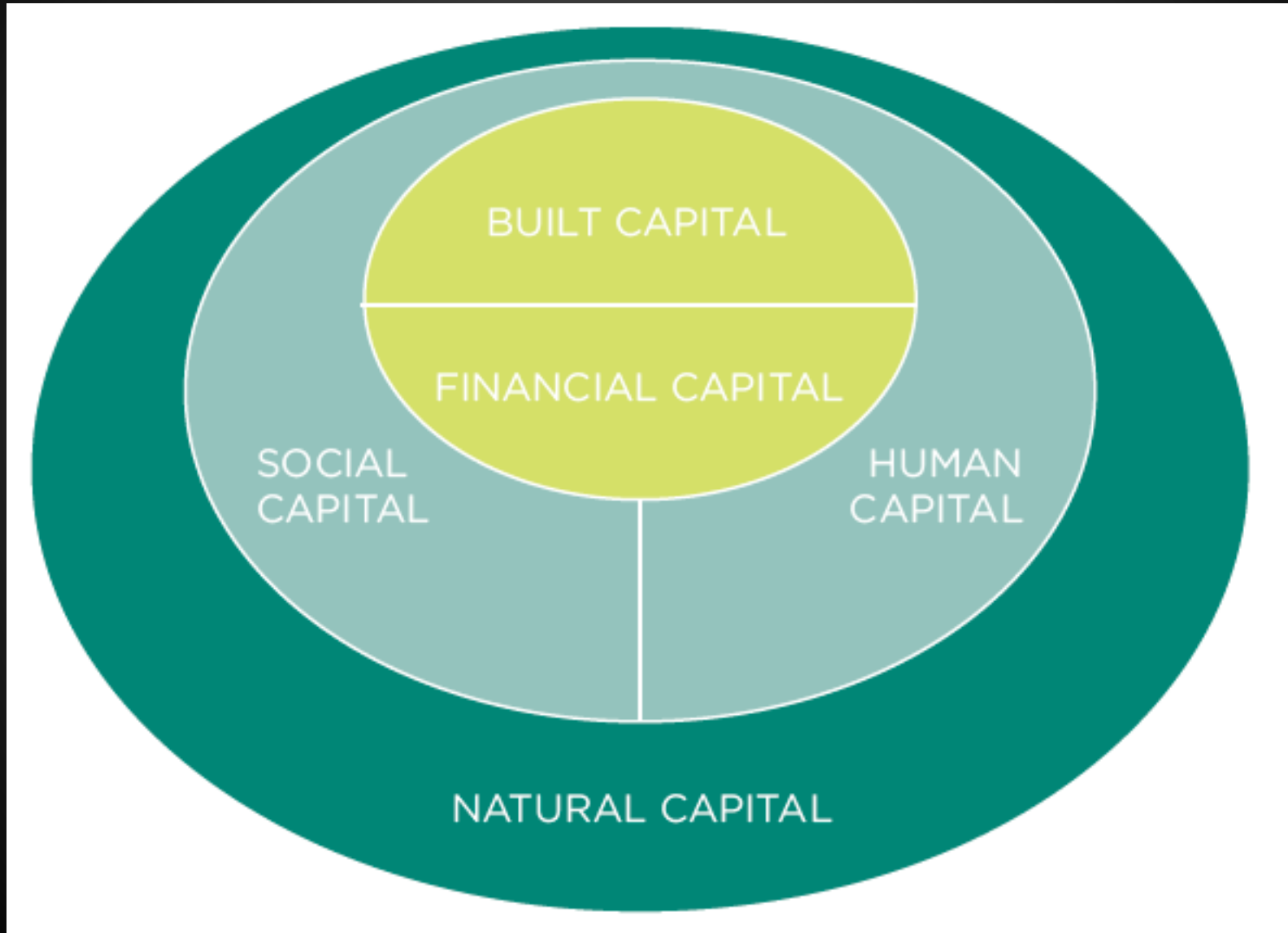
*How do we map, measure, and model  
environmental + social value creation in the  
built environment?*



INTERNATIONAL  
**LIVING FUTURE**  
INSTITUTE



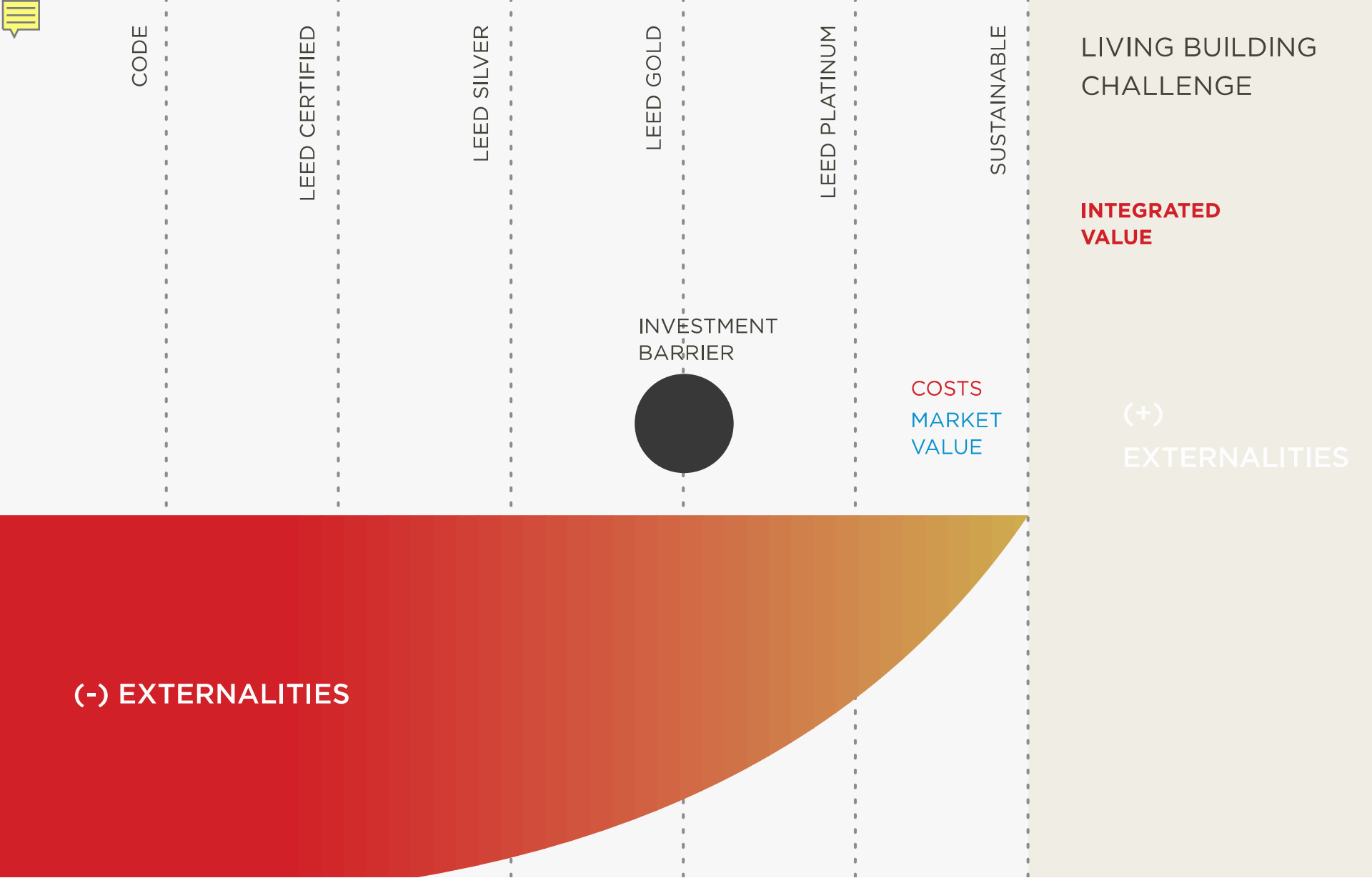
*Integrated Value = Market Value + Net Externalities*



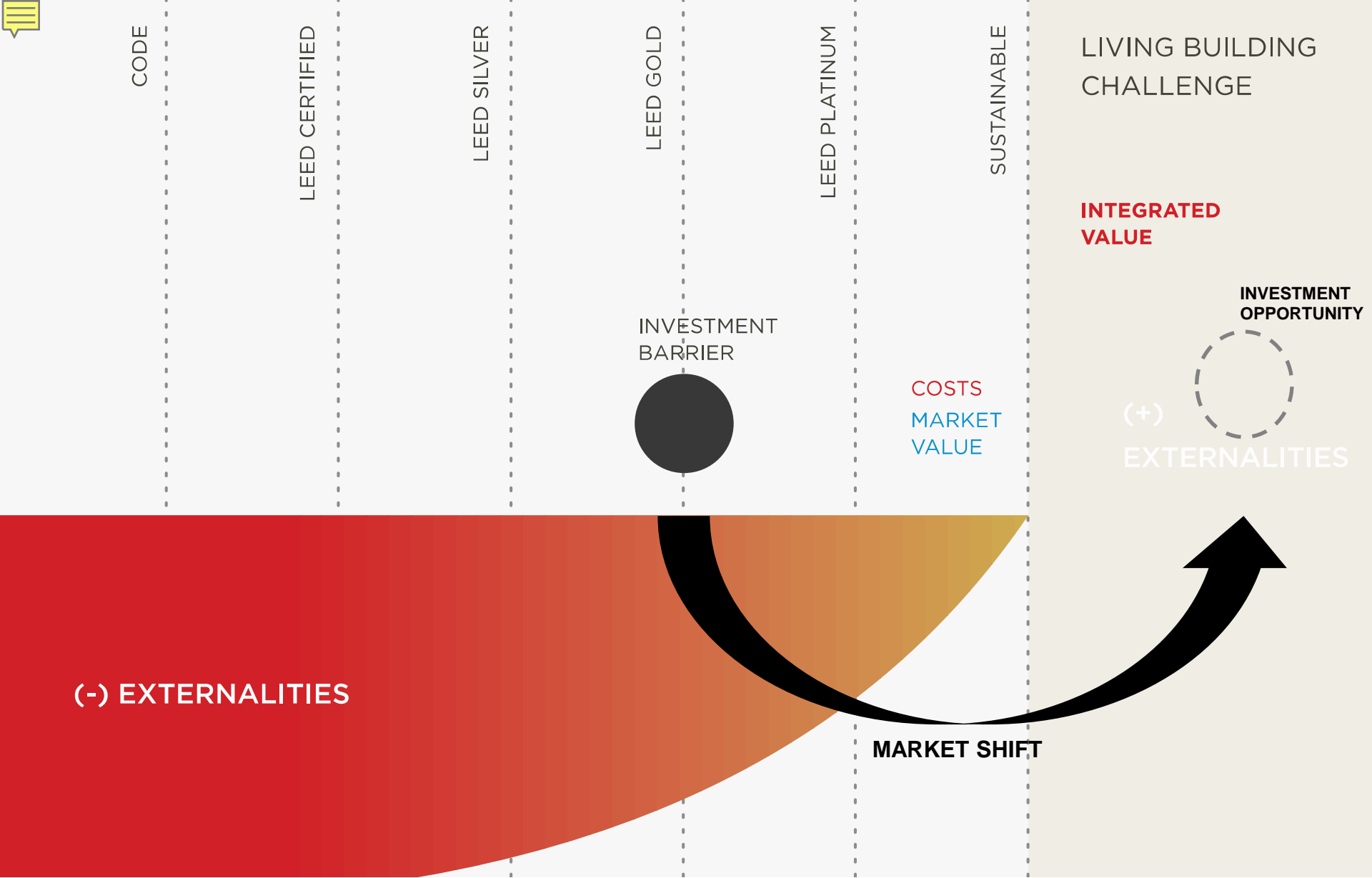


# What's Possible Today ...





## THE ECONOMICS OF CHANGE



# THE ECONOMICS OF CHANGE



# Audience and Advisory Council

Owner/Developers

Investors

Lenders

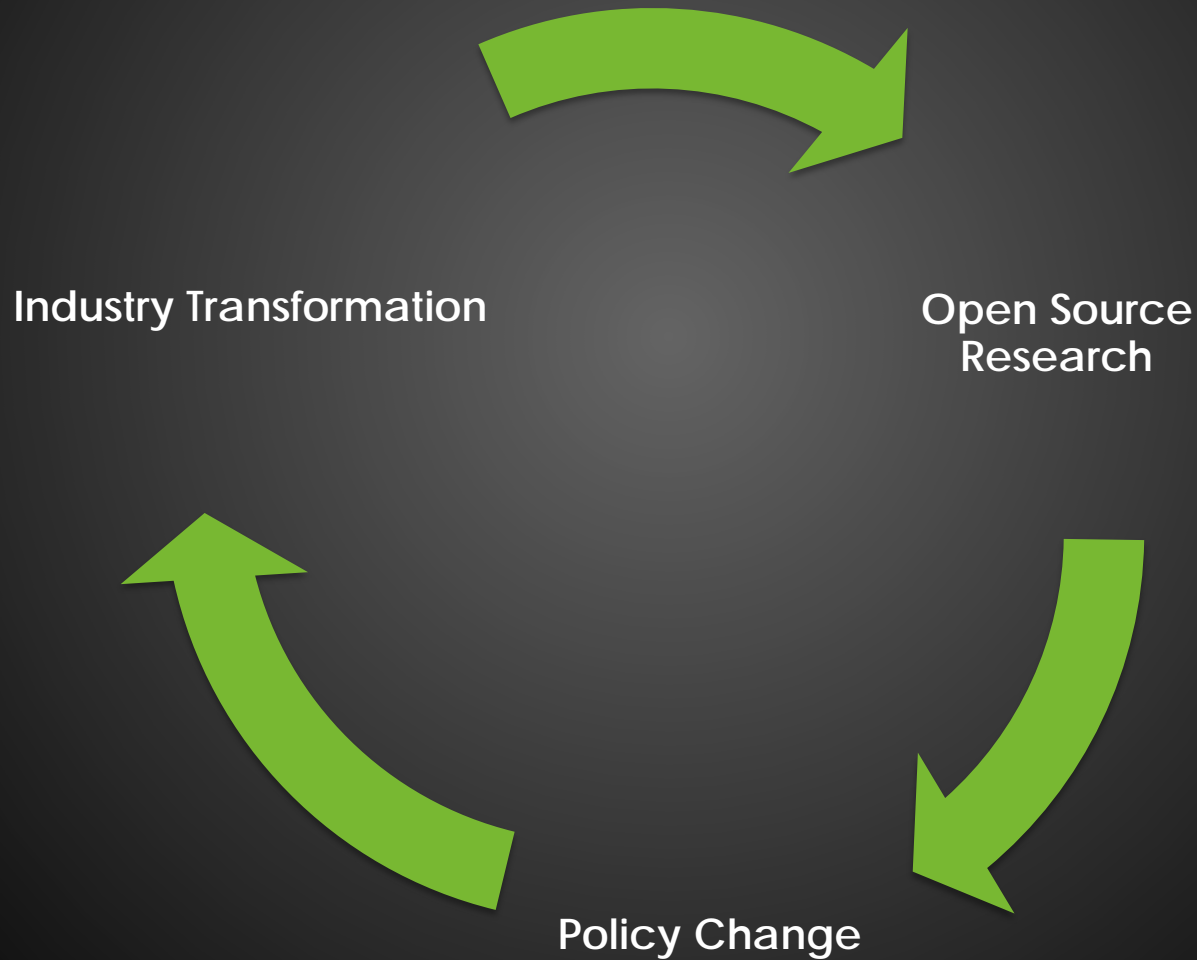
Appraisers

Policy Makers



# Industry Adoption Framework

(Theory of Change)



# Economics of Change: Integrated Valuation Tool™

Mapping, Measuring, and Analytical Modeling for  
Multiple Forms of Capital in the Built Environment



# Expanding the Value Proposition

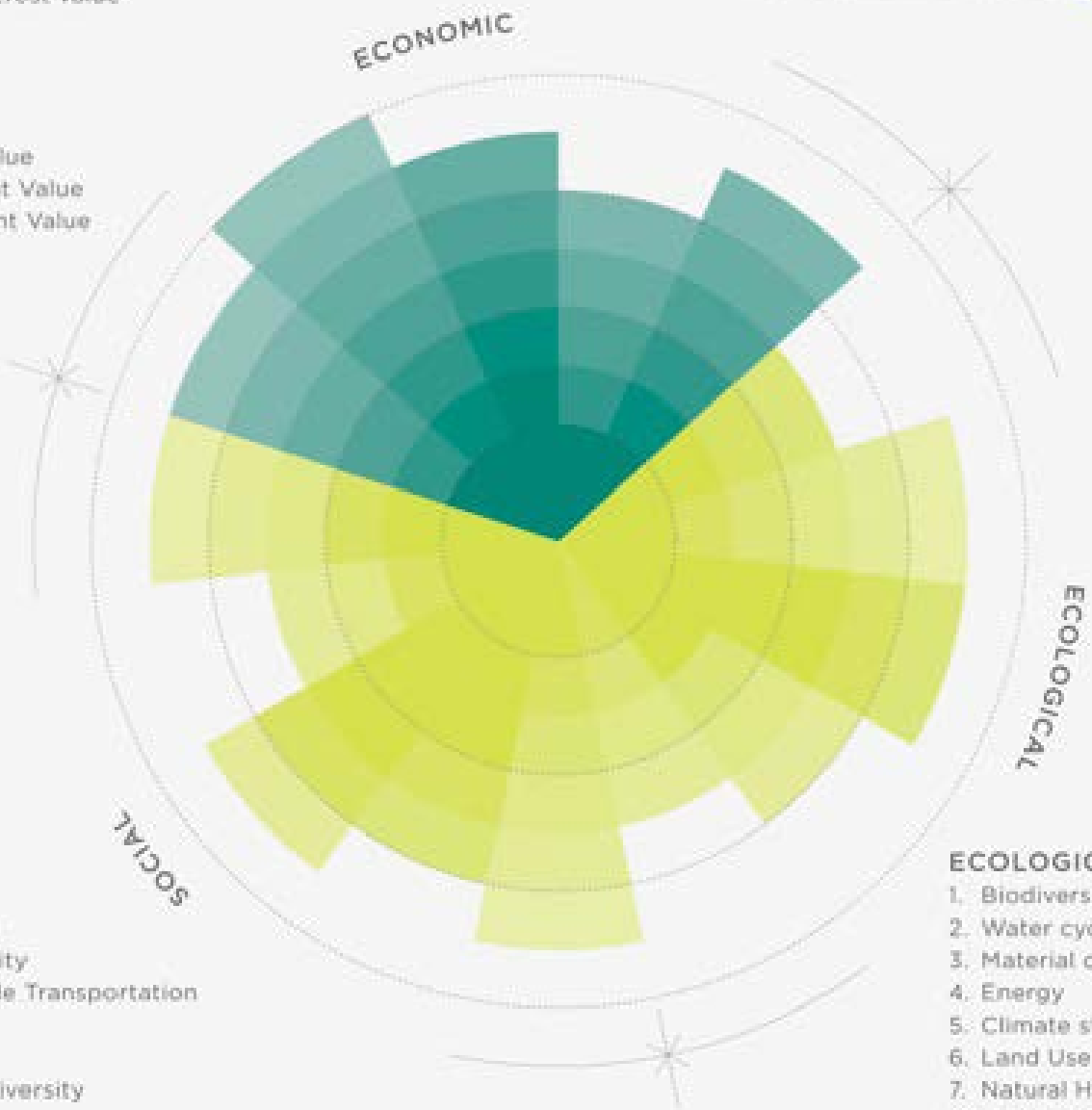
## ECONOMIC

1. Assessed value
2. Business enterprise value
3. Public interest value
4. Use value
5. Worth
6. ROI
7. IRR
8. Market Value
9. Investment Value
10. Net Present Value

CURRENTLY VALUED



NOT CURRENTLY VALUED



## SOCIAL

1. Health
2. Creativity
3. Accessibility
4. Sustainable Transportation
5. Security
6. Equity
7. Cultural Diversity
8. Beauty
9. Biophilia
10. Pedagogy and Research

## ECOLOGICAL

1. Biodiversity
2. Water cycles
3. Material cycles
4. Energy
5. Climate stability
6. Land Use
7. Natural Hazard Reduction
8. Food Production
9. Soil Health
10. Microclimate

# Mapping Value Layers

## Type

- Example: Worker Productivity

## Definition

- Effective work produced (quality and quantity) per year

## Pathway to Value in Building

- Natural Daylight
- Natural Ventilation
- Access to Natural Views
- Non-Toxic Materials

# Measuring ...

**Quantity  
and/or Quality  
of Value  
Created**

- Example: % Increase in Worker Productivity

# Measuring and Valuing

## Quantity and/or Quality of Value Created

- Example: % Increase in Worker Productivity

## Estimated Value Per Unit/Quality

- \$ per worker/year

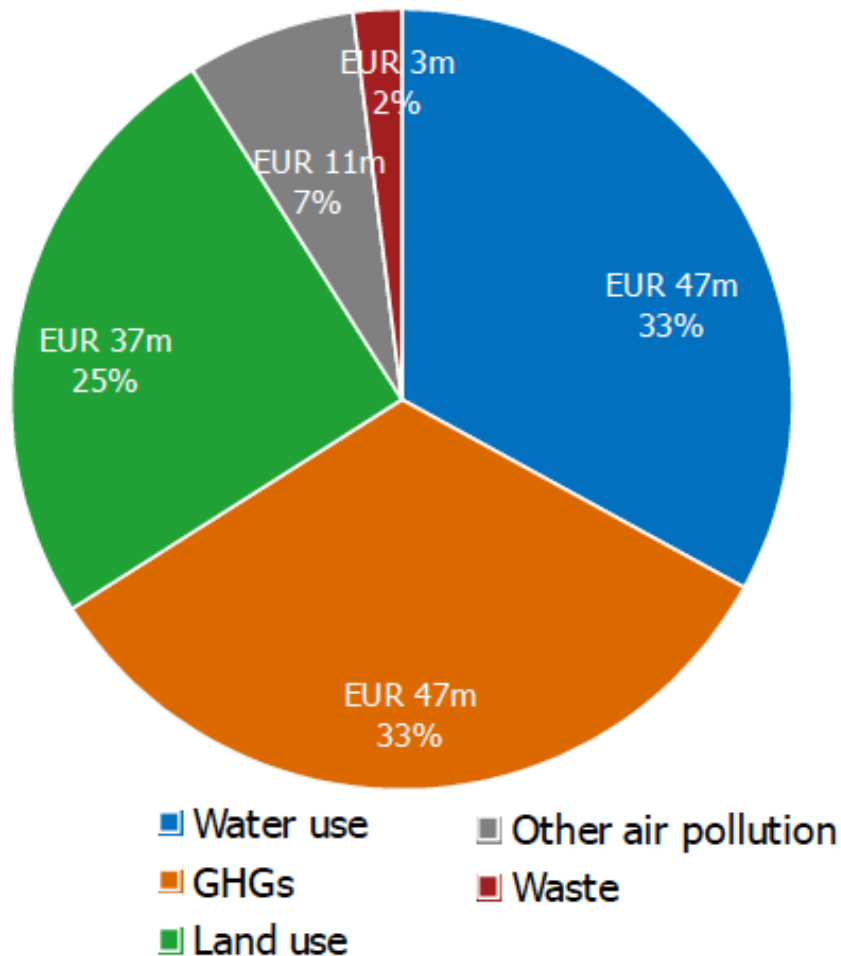
## Valuation Methodology

- Standard methods from ecological economics

## Estimated Total Value

- Value as a stream of \$ values over time

# Puma's Environmental P&L Account



€145,000,000 in  
Environmental  
Externalities in 2010



# Impacts of a Carbon Tax

- British Columbia has enacted a Carbon Tax of \$30 CDN/metric ton of CO<sub>2</sub> Equivalent
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# Analytical Models

## Funding Mechanisms

- Tax Credits & Deductions
- Ecosystem Services Payments
- Grants
- Impact Fees
- Green Leases

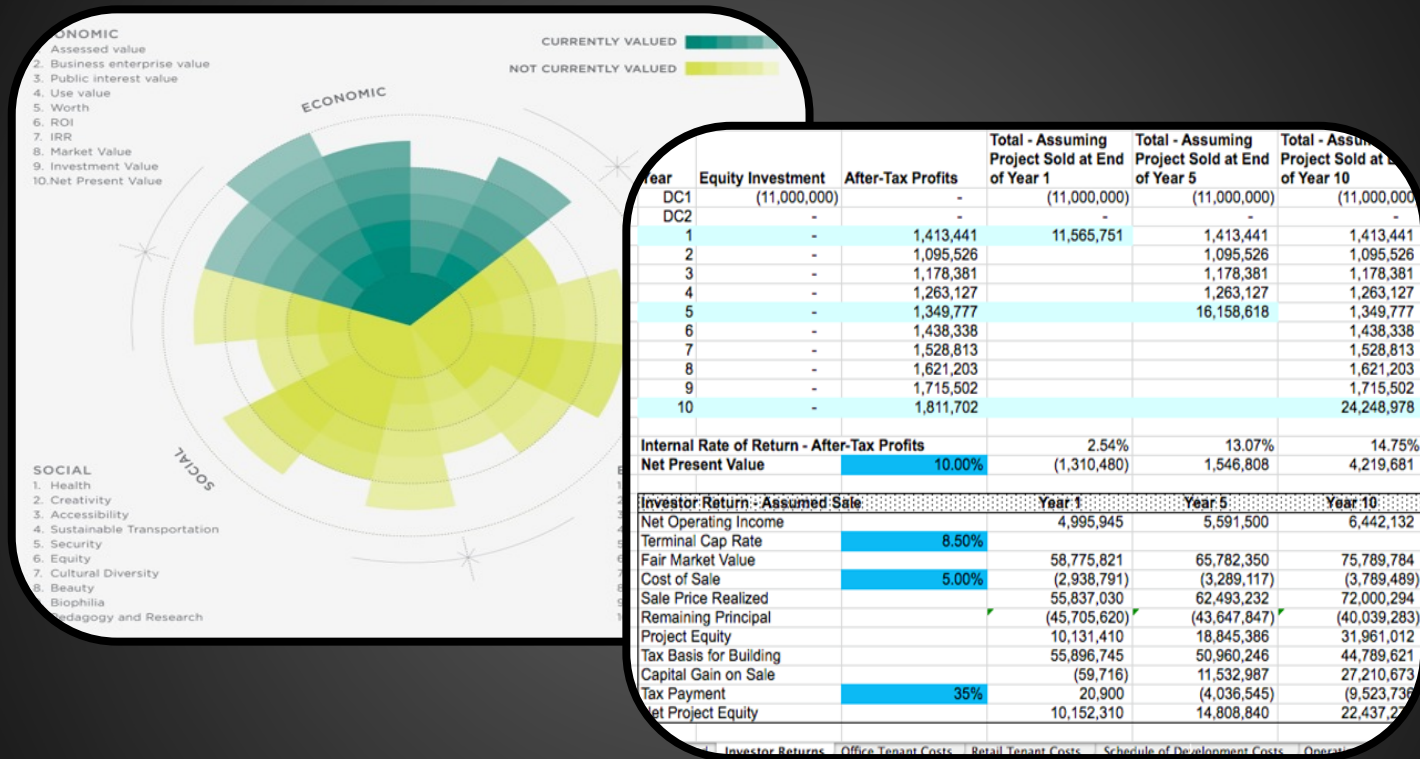
## Value Realized by Owner

- Funding Mechanisms flow portion of integrated value into financial returns
- Resulting in Owner sharing some of this value

## Value Realized by Society

- Tenants/Occupants
- Neighbors and Adjacent Buildings
- Public

# Integrated Valuation Tool™



Open Source

Compatible with EXCEL and ARGUS®

Existing, Retrofit, and New Buildings

Major Real Estate Investment Types (Office, Apartment, etc.)



# Key Benefits

- For investors and owners, Tool demonstrates potential risks, liabilities, and upside from existing externalities, thereby enhancing decision making
- For policy makers, provides support for integrated policy measures that will shepherd in an era of full spectrum, true-cost, lifecycle accounting
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# Timeline

1. Framework Development (2013-14)
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# Measurement and Valuation Algorithms

## 1. **Measurement** of Externalities Affecting

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## 2. **Valuation** of these Externalities

- A. Hedonic Pricing (statistical regression against "comps")
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- H. Other Standard Techniques



Thank You...

Questions?



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# Living Buildings and the Economics of Change

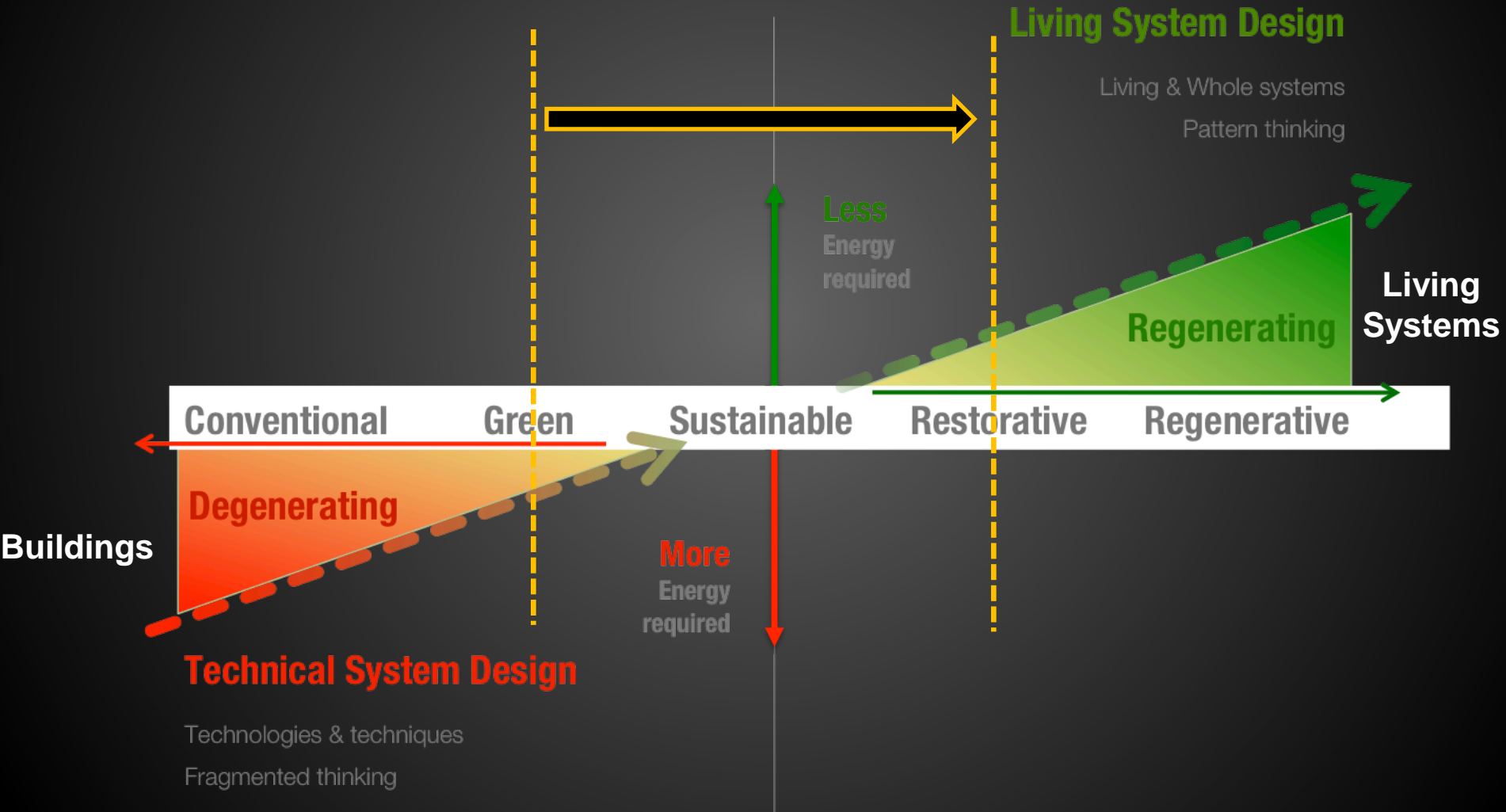
Real Estate Connection – December 5, 2013

Stuart Cowan, Ph.D.  
Partner, Autopoiesis LLC



autopoiesis

# Trajectory of Sustainable Design





# Living Building Challenge

Site  
Water  
Energy  
Health  
Materials  
Equity  
Beauty



**BULLITT CENTER**  
SEATTLE, WASHINGTON

COMPLETED: 2013

PRIMARY BUILDING TYPE:  
COMMERCIAL OFFICE

PROJECT SIZE: 50,000 SF





CENTRE FOR INTERACTIVE  
RESEARCH ON SUSTAINABILITY  
VANCOUVER, BC, CANADA

COMPLETED: 2011

PRIMARY BUILDING TYPE:  
RESEARCH FACILITY

PROJECT SIZE: 59,000 SF



UNIVERCITY CHILDCARE AT SIMON  
FRASER UNIVERSITY

VANCOUVER, BC, CANADA

COMPLETED: 2011

PRIMARY BUILDING TYPE:  
CHILDCARE

PROJECT SIZE: 4,700 SF





VANDUSEN BOTANICAL GARDEN  
VANCOUVER, BC, CANADA

COMPLETED: 2011

PRIMARY BUILDING TYPE:  
VISITOR CENTER

PROJECT SIZE: 24,000 SF



# OKANAGAN COLLEGE CENTER OF EXCELLENCE

PENTICTON, BC, CANADA

COMPLETED: 2011

PRIMARY BUILDING TYPE:  
UNIVERSITY CLASSROOM

PROJECT SIZE: 75,000 SF







A MODEL OF A LIVING FUTURE



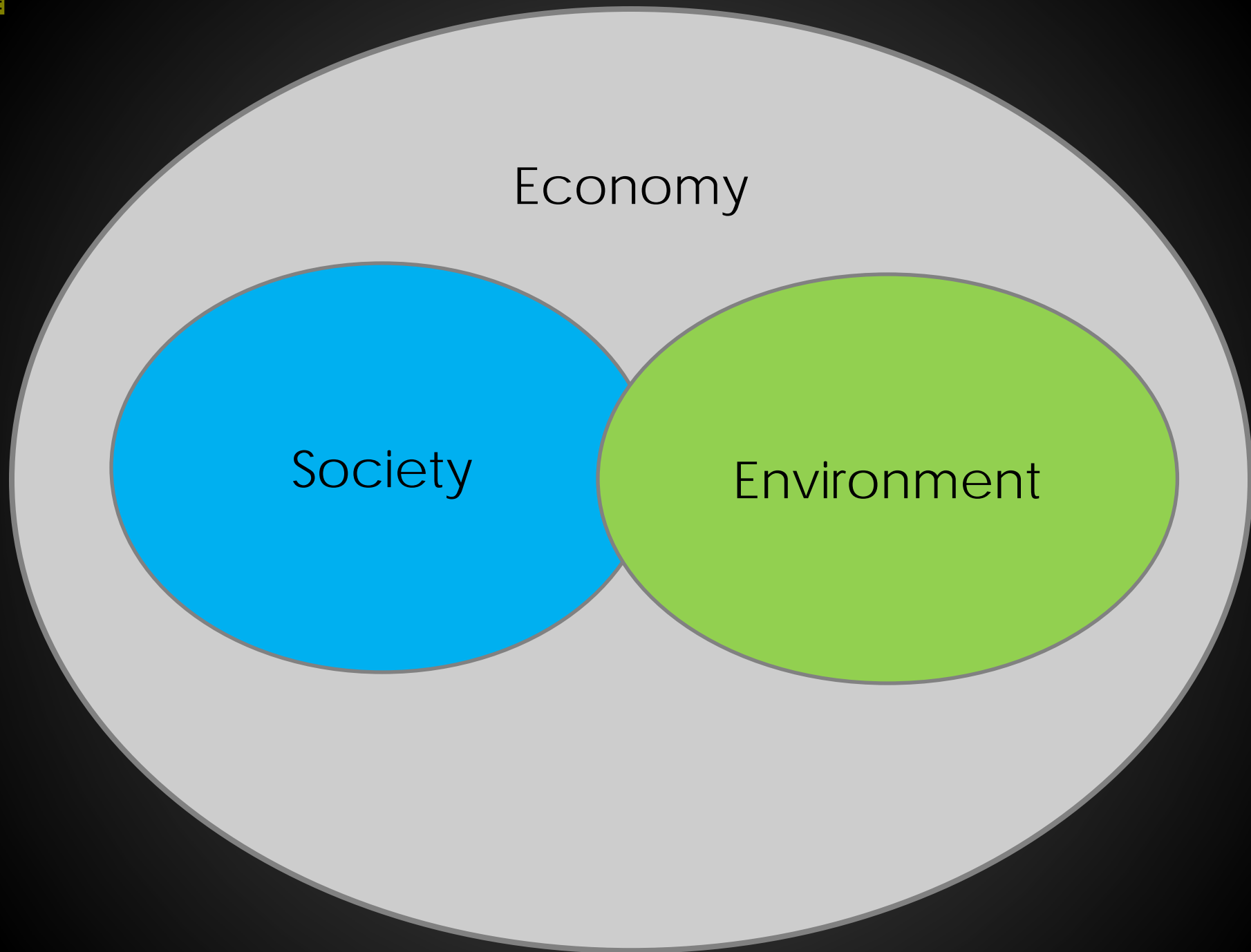


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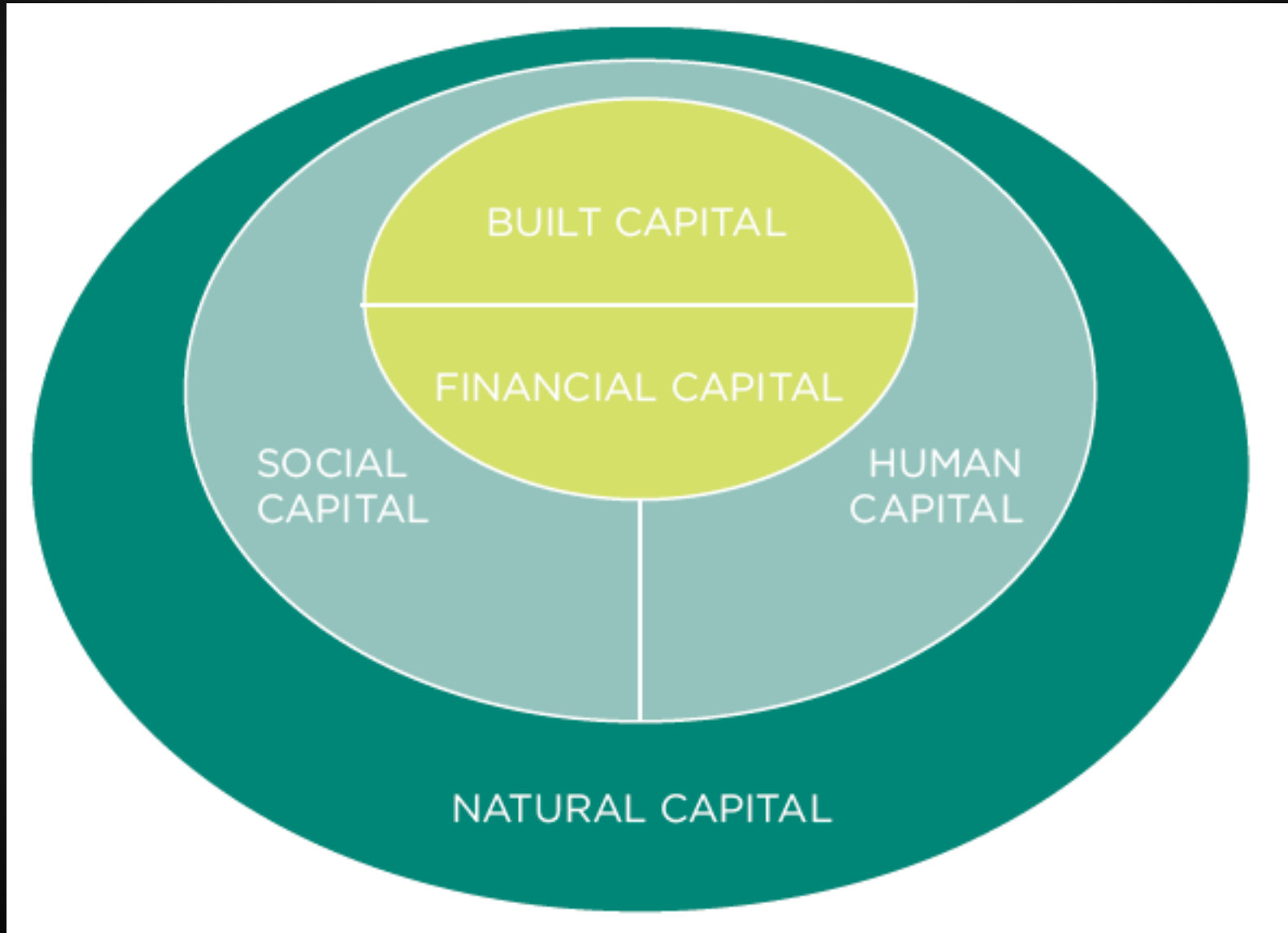
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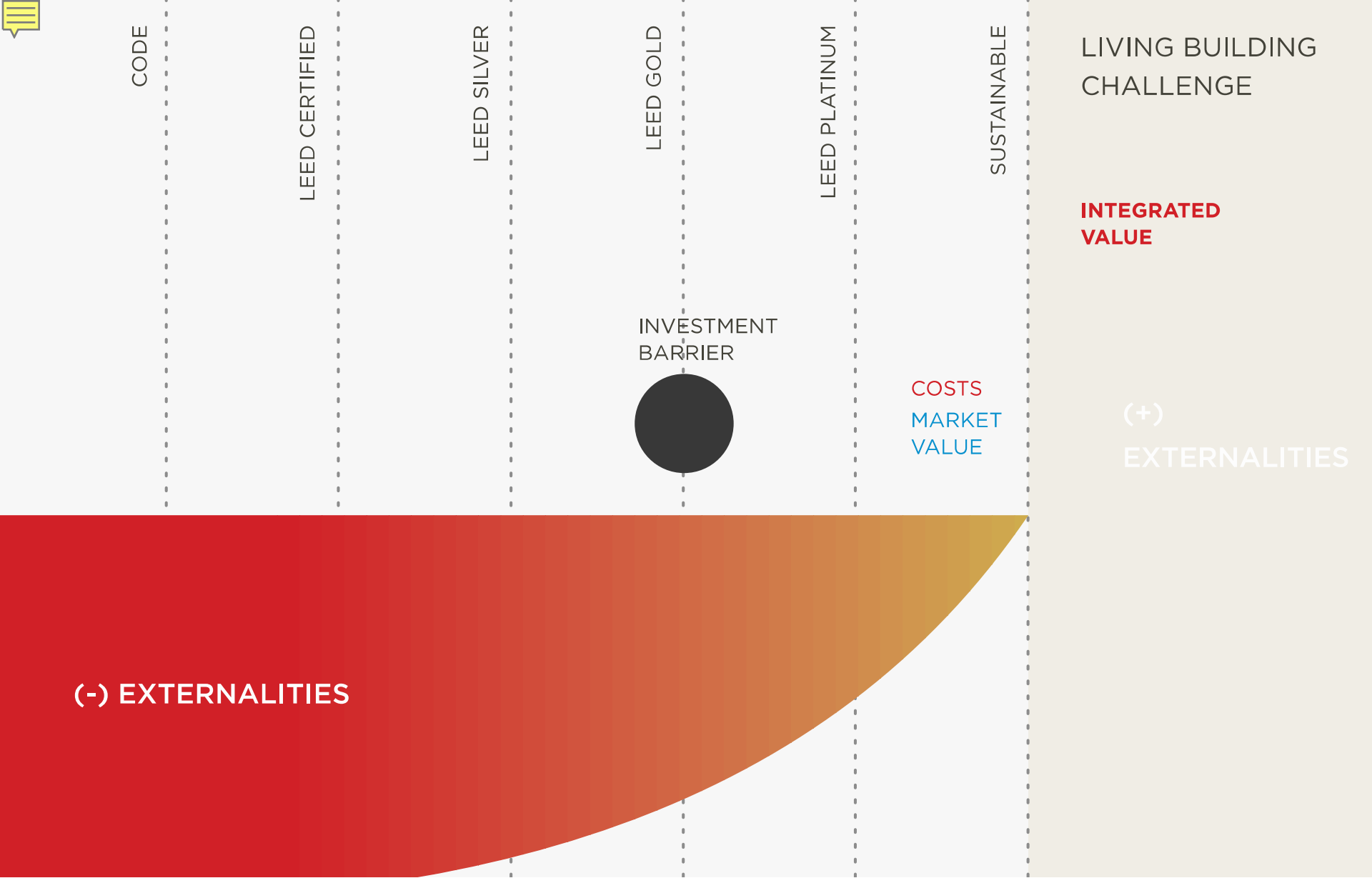


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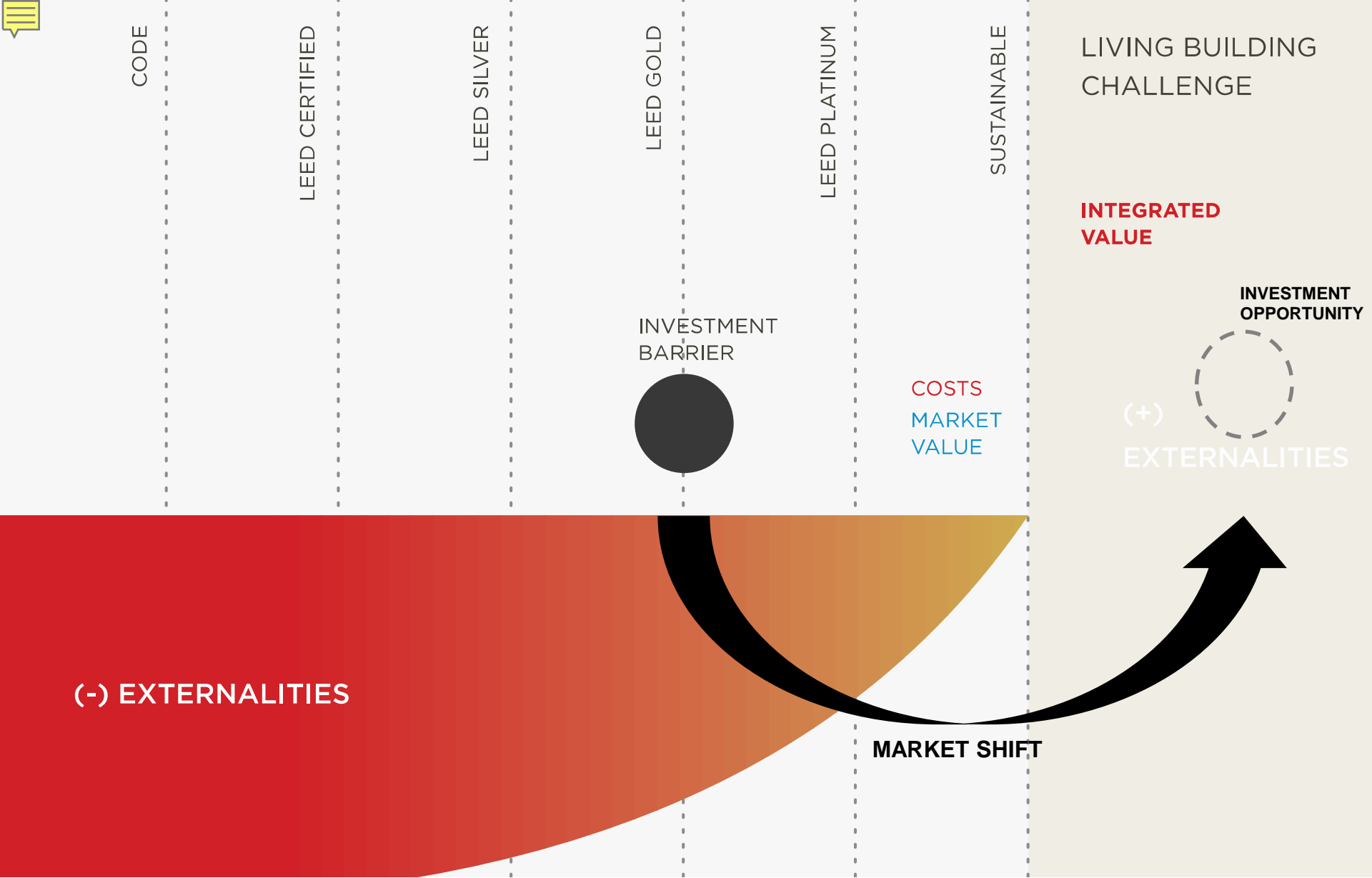
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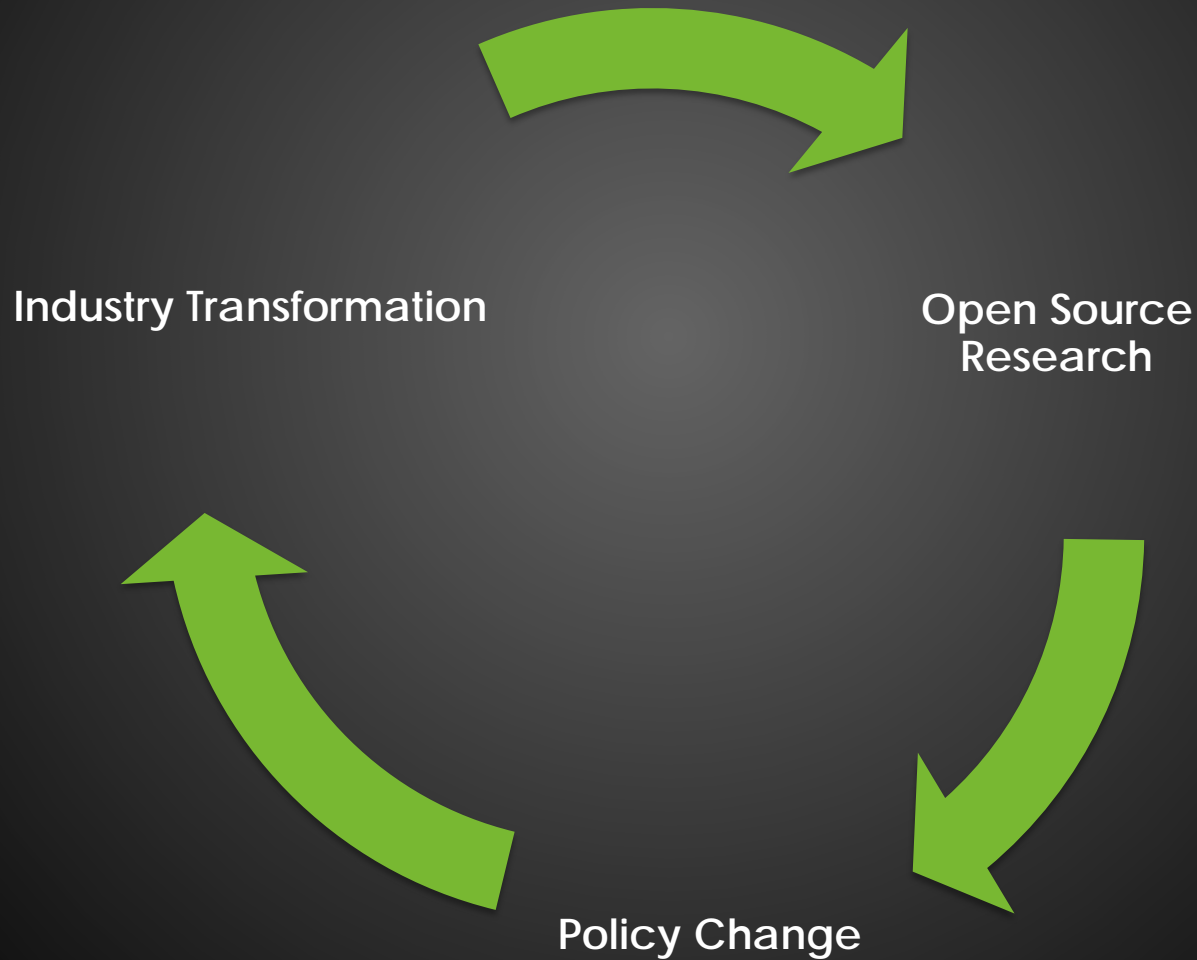
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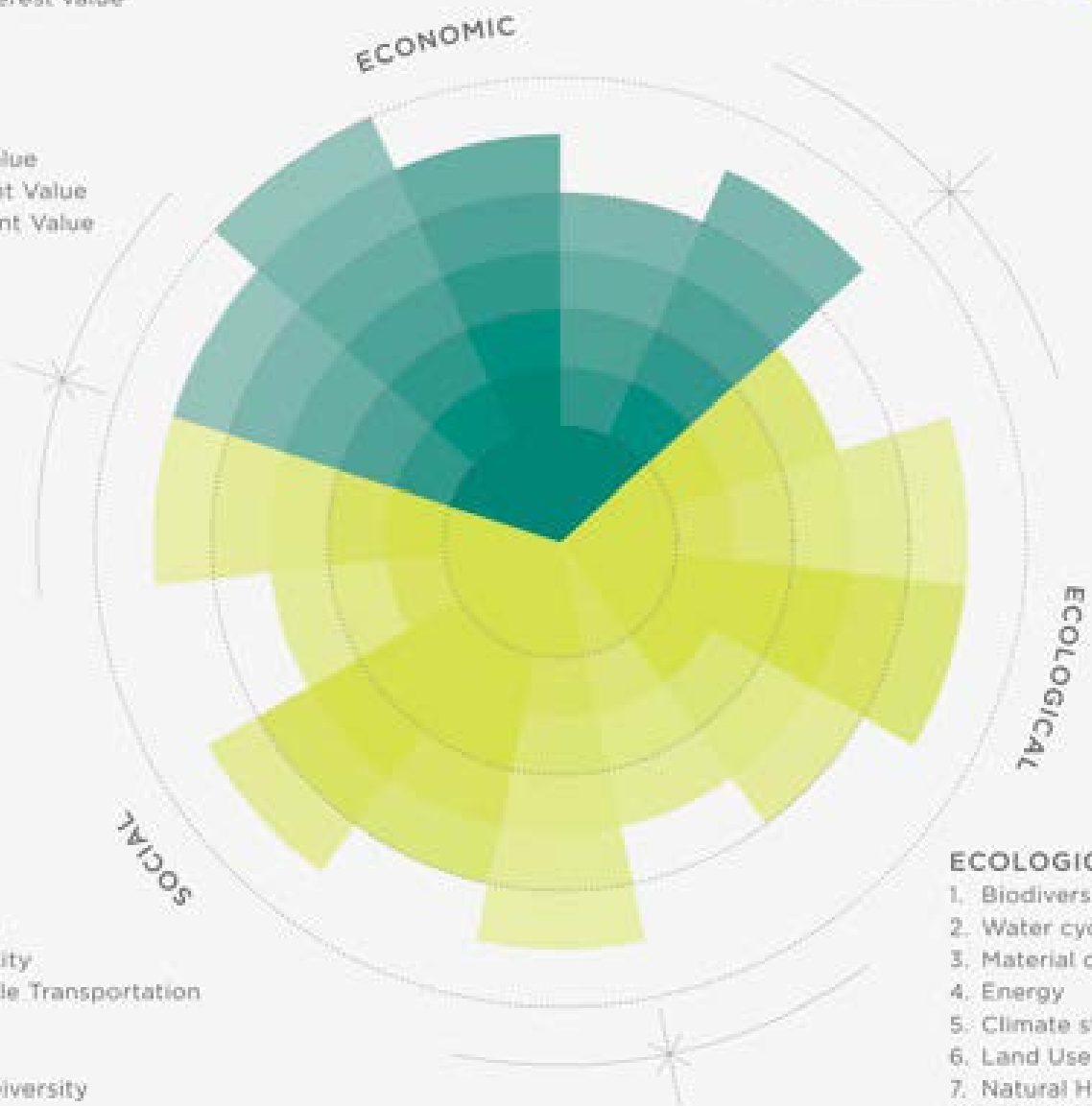
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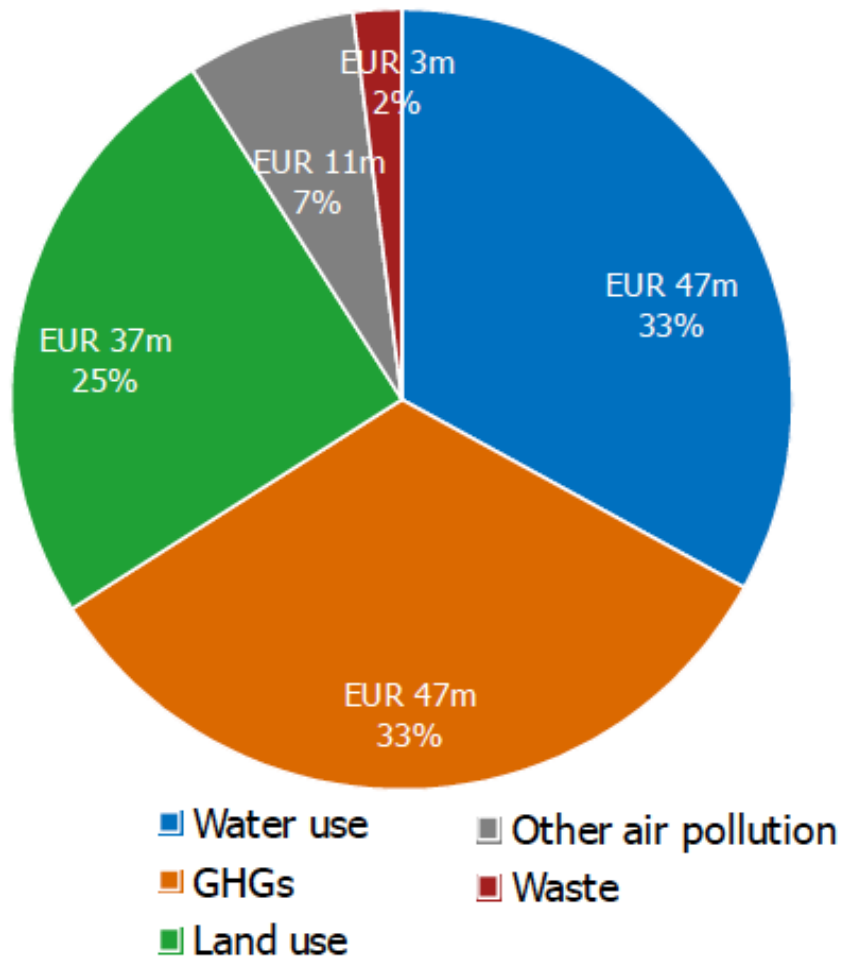
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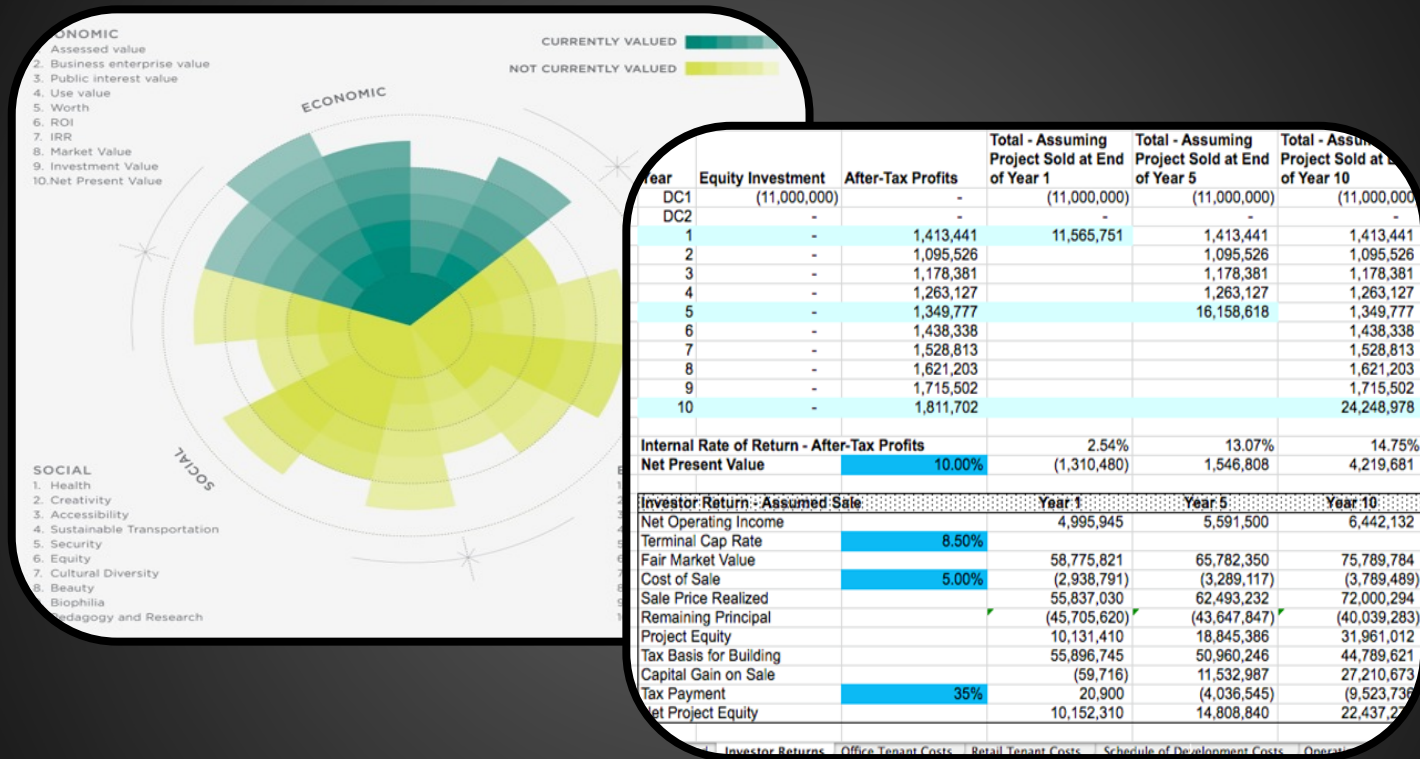
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