

THE ECONOMICS OF CHANGE

INTEGRATED POLICY APPROACHES
TO UNLOCKING THE VALUE OF
A RESTORATIVE BUILT ENVIRONMENT

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The Economics of Change:

Integrated Policy Approaches to Unlocking the Value of a Restorative Built Environment

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EXECUTIVE SUMMARY

The real estate industry's journey towards a more ecologically and socially responsible built environment has entered an economic bottleneck. Throughout the past twenty years of the modern green building movement, we have witnessed a renaissance in sustainable design and construction practices that are yielding a 21st century building stock that is a dramatic improvement over its 20th century "business-as-usual" counterpart. The enormous success and momentum generated by green building ratings systems such as BREEAM¹ and LEED™² have propelled the real estate industry on a path toward more responsible development paradigms.

The *Living Building Challenge*³, a program that calls for the creation of building projects at all scales to operate as cleanly, beautifully and efficiently as nature's architecture, has inspired a whole new era of practitioners that are striving to transcend the sustainability threshold (see Image 1) and bring to market buildings and infrastructure that actually repair habitat and watersheds, improve human health, and utilize only rain and the power of the sun to operate.

Unfortunately, our understanding and ability to fully capture the full economic value of an ecologically and socially responsible built environment has not kept pace with our knowledge and ability to design and construct it. This uptake of advanced and effective sustainable building practices has been stymied by the idea that building green means paying more without a corresponding increase in asset value. As a result, transforming our built environment into a force for ecological and cultural restoration will mean tackling head-on the financial framework in which the real estate industry operates. Just as appraisal, valuation, and investment marshaled the resources to build the infrastructure we have today, a deeper understanding of value is necessary to guide investment towards a healthier, more productive and sustainable 21st century built environment.⁴ The current cost/valuation gap presents tremendous investment barriers for the real estate industry's continued success in delivering a sustainable built environment.

1 Building Research Establishment Environmental Assessment Method, established in the United Kingdom in 1990, <http://www.breeam.org/>

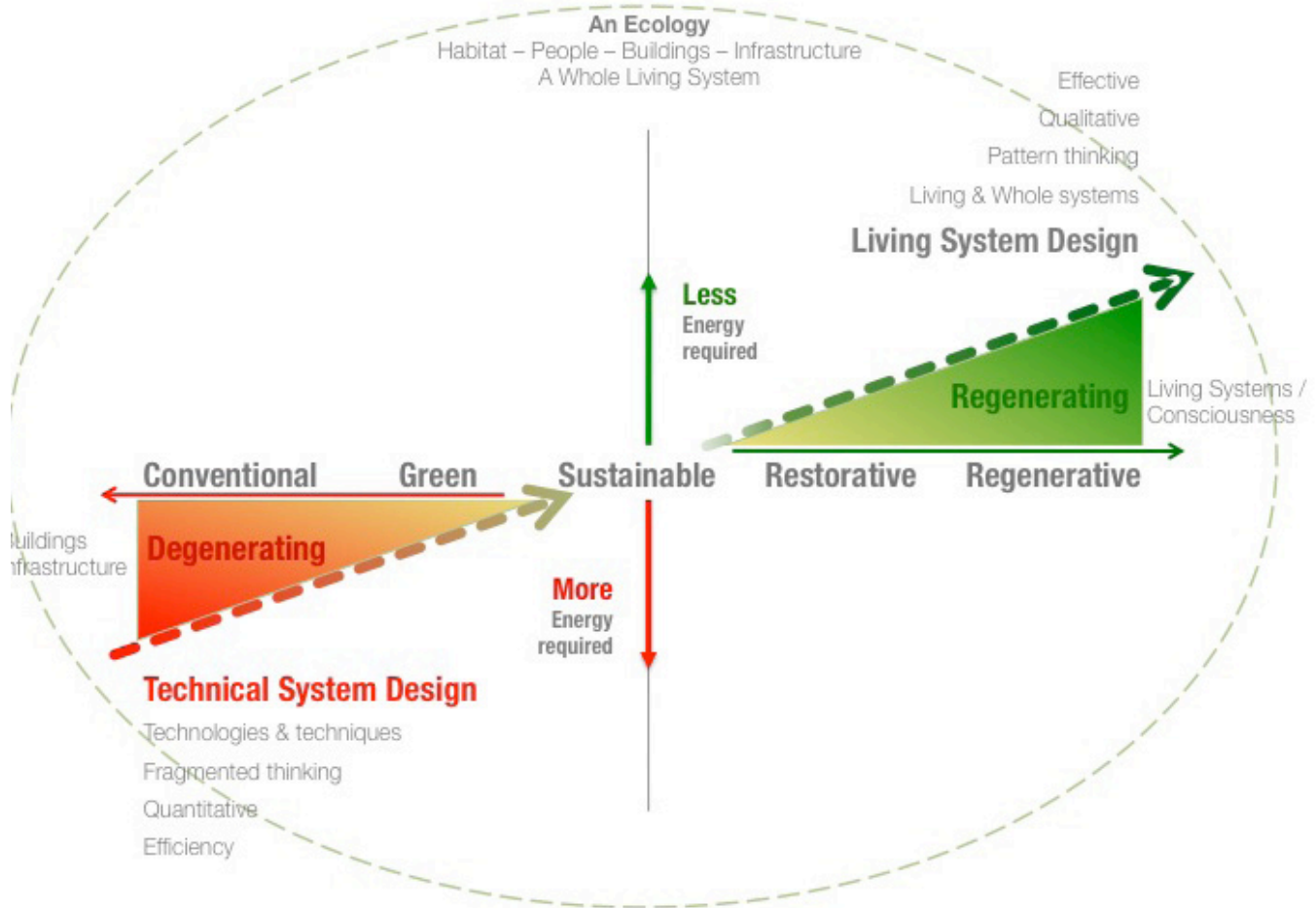
2 Leadership in Energy and Environmental Design, established in the United States in 2000, www.usgbc.org.

3 See www.living-future.org.

4 This section draws on *The Economics of Change: Project Overview* by Theddi Wright Chappell, Stuart Cowan, Richard Graves, Jason F. McLennan, and Jason Twill. International Living Future Institute: Seattle, WA. 2013.



FROM CONVENTIONAL TO REGENERATIVE DESIGN⁵



Trajectory of Ecological Design

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In order to transcend these barriers, the *Economics of Change* project was established in 2011 as an interdisciplinary market transformation project under the leadership of the International Living Future Institute. By integrating practical knowledge of the real estate market with expertise in sustainable design, complex systems analysis, and ecological economics, a diverse team of experts has been pooled together with the ability to support a catalytic shift in both theory and practice within the real estate investment sector. *Economics of Change* has defined a theory of change for the real estate industry that includes three closely linked initiatives:

⁵ Reed, Bill. "Trajectory of Environmentally Responsible Design," Integrative Design Collaborative, <http://www.integrativedesign.net/trajectory.htm>.



- Local, state, and national policy innovation to provide incentives for high-performance green buildings.
- *Integrated Valuation Tool*™ development to inform a new generation of appraisal and valuation models that account for ecological and social value creation.
- Industry transformation through new standards, protocols, and processes around appraisals, valuation, lending, and investment.

This report applies the lens of the *Economics of Change* to explore the current landscape of policies that fuel existing investment barriers and offers a case for more integrated policy solutions that will redefine and improve our ability to value and finance a truly restorative built environment.

Our research methods included extensive literature reviews; interviews with leading national and international real estate experts; two regionally focused policy workshops featuring key policy leaders in Oregon and Washington (Seattle, Washington in June 2013 and Portland, Oregon in September 2013); and ongoing development of a prototype investment modeling tool to link conventional real estate investment models with broader forms of accounting for multiple types of value.

The first section of the report, *Global Context*, puts the United States real estate industry in the context of the global transition to sustainability, including policy drivers, accounting and reporting frameworks, and pressures to “internalize” costs currently left for other places and future generations to absorb. We then review the concept of *Integrated Value* and its applicability to policy design for a restorative built environment.

The second section covers the existing green building policy landscape in the United States at the federal, state, and municipal levels with special reference to innovative climate change policy work in Portland and Seattle.

The third section provides a series of policy recommendations on the application of broader concepts of value; the relevance of new accounting rules and standards; integrated design; integrated cost estimating; and key areas of built environment impact including energy, water, materials, ecosystem services, and public health.

The appendices include a detailed review of key green building policy literature; additional detail on the Seattle Climate Action Plan; and notes from the two policy workshops referenced above.

This report was prepared with the generous support of the John D. and Catherine T. MacArthur Foundation and The Bullitt Foundation.



GLOBAL CONTEXT

THE GLOBAL ECONOMIC PARADOX

The famed Irish novelist Oscar Wilde once wrote “people know the cost of everything and the value of nothing.”⁶ This notion has played out on the grandest of scales to the detriment of both society and the environment. The current economic system has a fatal flaw: infinite growth cannot happen on a finite planet.

In 1972, Donella Meadows and her colleagues at The Club of Rome painted a very clear picture of this dilemma and sent a warning to the world with their book *The Limits to Growth*, but not much has changed in the ensuing four decades. In many ways we are the victims of our own success. The remarkable progress we have made over the past two centuries in manufacturing, transportation, technology, science, medicine and food has yielded tremendous benefits. All this growth and success, however, has come with severe side effects, many of which are beginning to overshadow these benefits - climate change, freshwater shortages, poor air quality, species extinction, soil fertility loss, bioaccumulation of persistent toxins, financial instability, social inequity, and ecosystem collapse to name but a few. These very unfortunate, yet avoidable, negative impacts threaten our current and future quality of life and quite possibly our very survival on earth, and have major implications for every sector of economic activity.

Economists refer to these side effects as “externalities,” and they occur because the world operates within an economic system that focuses on financial capital and built/manufactured capital without properly accounting for the health of human communities and of ecosystems. This leads to massive market failure – a systemic misallocation of resources and investments into buildings, infrastructure, products, and services with significant negative externalities with too little investment into those that reduce or eliminate these negative externalities.

For instance, through our current economic lens, ecosystem services, which are those services that nature provides that create the conditions conducive for life on our planet (e.g. clean air and water, biodiversity, climate stability, etc.), are merely considered “free and unlimited” inputs to the economic system. Furthermore, the enormous and costly damages being done to these fragile systems are conveniently classified as “tragedies of the common,” borne by society as whole, by future generations, and often by the poorest and most marginalized individuals and nations.

Current efforts to protect and preserve ecosystems and improve our quality of life are largely fragmentary – protecting one geographic area or one endangered species at a time, fighting pollution one toxic chemical at a time, or advocating progressive social policies one at a time. *Such a piecemeal approach will never produce the results that are needed in the timeframe or at the scale at which they are needed.* Reconnecting the economy to environmental and social systems is essential to transcend the current global crisis and reach a future that is socially just and ecologically restorative. Only a systemic transformation of our outdated economic theories, practices, and institutions can lead to the breakthrough innovations that are necessary to resolve the environmental

6 Oscar Wilde, *Picture of Dorian Gray*, 1890.



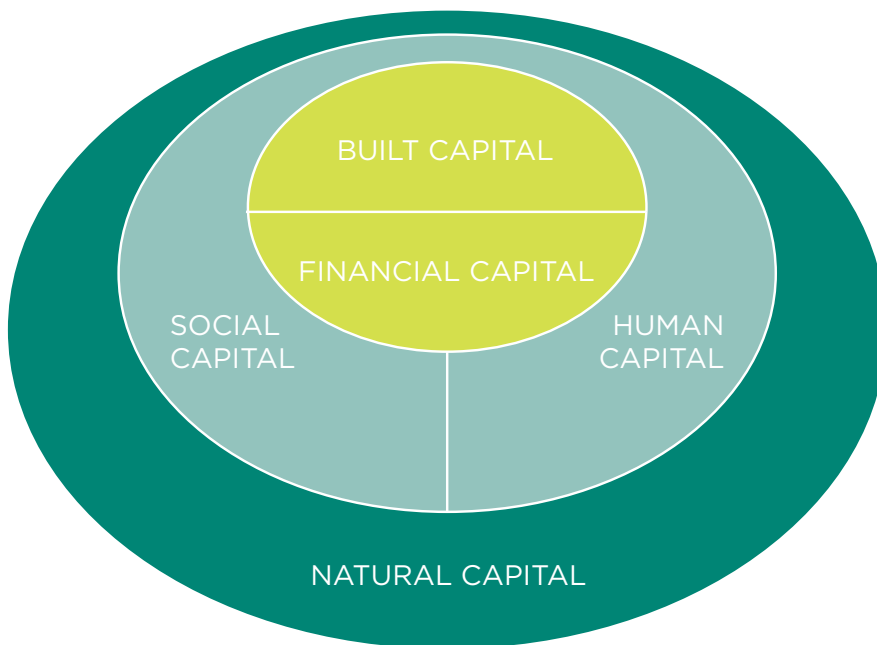
and social crises we now face.⁷ In the simple but powerful words of Pavan Sukhdev, founder of Gist Advisory Group and study lead for the United Nations initiative on The Economics of Ecosystems and Biodiversity (TEEB), “we must eliminate the economic invisibility of nature” and create a global economy which fundamentally accounts for the value of social and natural capital.

We can identify three stages in this transformation:

- Recognizing that financial markets are disconnected from the lives of ordinary people and from natural systems
- Using “Triple Bottom Line” approaches to start tracking natural capital and social capital⁸
- Understanding that our species is embedded within the broader, 3.8 billion year old operating system of life on Earth and developing corresponding approaches to accounting and value

THE FIVE CAPITALS MODEL⁹

One important approach to understanding the systemic connections between multiple types of activity, value, and wealth is the Five Capitals Model.¹⁰ In this model, Built/Manufactured Capital and Financial Capital are explicitly nested within Social Capital and Human Capital, which in turn are nested within Natural Capital. These five forms of capital, each with corresponding systems of accounts, internal dynamics, and linkages to the other forms, can be defined as follows:



7 Batker, David and David Cosma, “Sustainability Through a New Economic Paradigm for the 21st century,” 2004.

8 For a brief overview, see <http://www.economist.com/node/14301663>.

9 Graphic adapted from <http://www.forumforthefuture.org/project/five-capitals/overview>.

10 See <http://www.forumforthefuture.org/project/five-capitals/overview>.



Natural Capital includes ecosystems like forests, wetlands, and grasslands along with a wide range of renewable and non-renewable materials and energy sources

Human Capital consists of people’s health, knowledge, skills and motivation. All these things are needed for productive work. Enhancing human capital through education and training is central to a flourishing economy.

Social Capital includes institutions that help us maintain and develop human capital in partnership with others; e.g. families, communities, neighborhood associations, businesses, schools, and NGOs and foundations.

Built/Manufactured Capital comprises buildings, infrastructure, machines, tools, etc.

Financial Capital plays an important role, enabling the other types of Capital to be owned, traded, securitized, loaned against etc. But unlike the other types, it has no real value itself but is representative of natural, human, social or built capital; e.g. shares, bonds, or banknotes.¹¹

There are initiatives in a variety of economic sectors to begin “Integrated Reporting” based on The Five Capitals and related models. According to the International Integrated Reporting Committee, “It makes visible an organization’s use of and dependence on different resources and relationships or ‘capitals’ (financial, manufactured, human, intellectual, natural and social), and the organization’s access to and impact on them ... Because traditional reporting occurs in silos, it encourages thinking in silos. Integrated Reporting, on the other hand, reflects, and supports, integrated thinking - monitoring, managing and communicating the full complexity of the value creation process and how this contributes to success over time.”¹²

The core premise of the *Economics of Change* project is simple: following the lead of other sectors, *to demonstrate how an integrated understanding of multiple forms of capital may be directly woven into appraisals, evaluations, and reporting frameworks to both expand and challenge the current definition of value within the real estate industry.*

TOWARD THE AGE OF INTERNALITIES: NEW DRIVERS FOR REAL ESTATE VALUE ON A FINITE PLANET

In the coming decades of the 21st Century, corporations and industries would be wise to prepare themselves for an era of “internalities” where calculating and disclosing one’s externalities will be made mandatory by governments and other regulatory bodies.¹³ An increasingly likely scenario is emerging where these externalities will be aggressively addressed at local, national, and international levels through pricing (taxes and subsidies); regulation; performance standards; and other policy tools. This kind of integrated policy approach to these societal and environmental costs and benefits

¹¹ Adapted from <http://www.forumforthefuture.org/project/five-capitals/overview>.

¹² International Integrated Reporting Committee, *Towards Integrated Reporting: Communicating Value in the 21st Century*, 2011.

¹³ This concept is discussed at length in Pavan Sukhdev, *Corporation 2020: Transforming Business for Tomorrow’s World*, Island Press: Washington, DC. 2012.



would set in motion a massive shift in capital flows toward more socially and ecologically responsible investments and unlock new avenues to prosperity. The real estate industry in particular would have much to gain from understanding externalities in the built environment to benefit from potential future market conditions.

In the *Economics of Change* project, we define the *built environment* as buildings, infrastructure, and the entire materials economy that supports the design and construction industries. It is well documented that buildings consume more energy than any other sector. According to the U.S. Energy Information Administration (EIA), the building sector consumes 48% of all energy and 75% of all electricity produced in the United States. Globally, these percentages are comparable or even greater in some cases. Therefore, it is not surprising to learn that our buildings are also the largest contributor to global CO₂ emissions and hence human-induced climate change. In 2010, the building sector was responsible for 45% of CO₂ emissions in the United States.

A critical point to raise here is that we cannot decouple *what* we build from *where* and *how* we build. For the same year, U.S. transportation related CO₂ emissions accounted for 34% of CO₂ emissions, much of which reflects the impact of America's auto-centric land-use planning policies that dominated post World War II development. The remaining 21% of CO₂ emissions are from industrial sources, many of which support the construction of our built environments.¹⁴

If we follow the journey of a single drop of rain in most cities around the world, we also see that urban storm water runoff is a leading cause of water body pollution and watershed degradation. Discharges from our wastewater treatment plants provide a heavy load of nitrogen, contributing to ocean acidification, along with a wide range of toxins.

In the past twenty years we have also learned a great deal about the adverse health impacts that our built environment has engendered. Failure to properly regulate the use of persistent toxic chemicals in the manufacturing of our building products and materials has led to increased bio-accumulation of these toxins within our bodies. A 2007 study commissioned by the Environmental Working Group tested the umbilical cord blood of ten expectant American mothers and found traces of over 285 known synthetic chemicals in the blood of these unborn babies. Many of these were banned decades prior, demonstrating persistence of these toxins over generations.¹⁵ Development patterns have amplified our reliance on cars, contributing to multiple public health epidemics including obesity from a lack of walkability and asthma from air pollution.

When we step back to connect these interrelated issues, we gain a deeper appreciation of why it so important to look at our buildings, infrastructure and materials economy as one entire system to fully understand the impact of human settlement and consumption patterns.

The real estate industry currently stands at an inflection point. We have the knowledge and technical capabilities today to design and construct our cities and towns in a manner that produces a wholesale reversal in these negative externalities and actually contributes positive externalities to society and nature. Indeed, *the shift from the conventional built environment to restorative buildings*

¹⁴ Architecture 2030, www.architecture2030.org.

¹⁵ Environmental Working Group, *10 Americans*, www.ewg.org



and infrastructure is one of the greatest opportunities the real estate industry has ever been presented with and has the potential to shepherd in a new era of economic prosperity.

Consider the following example to further define this issue. Today's landscape architects have the expertise to actually enhance ecosystem services within our built environments by integrating bio-filtration swales, vegetated roofs, and living walls into our buildings and streets that yield dramatic benefits to both society and the environment. Some of the added values of such design elements include:

- Reduced urban heat island effect;
- Enhanced microclimate;
- Improved air quality;
- Increased biodiversity;
- On-site storm water storage and cleansing and elimination of runoff;
- Increased human health and well-being (e.g. from the “biophilia” effect); and
- Increased resiliency to a changing climate.

Yet without the availability of incentives and subsidies to offset the additional costs of such design elements or the ability to monetize and capture these additional values, more often than not, these types of features do not make it into the final project.

It is clear that until we enact appropriate policies and shift industry practices and standards at both the global and national levels, restorative projects will remain elusive and we will continue to accelerate the decline of natural systems. We need to send the right policy and price signals to the real estate industry to allow it to *flourish by capturing the ecological and social value currently being left on the table.*



TOWARD INTEGRATED VALUE

INTEGRATED VALUE MODEL: EVALUATING UPSIDE AND RISK

The Economics of Change project is in the process of developing a comprehensive framework for understanding the combined economic (market), social, human, and ecological value creation in buildings, districts, and infrastructure.¹⁶ The project has introduced a critical new valuation concept:

INTEGRATED VALUE = MARKET VALUE + NET EXTERNALITIES

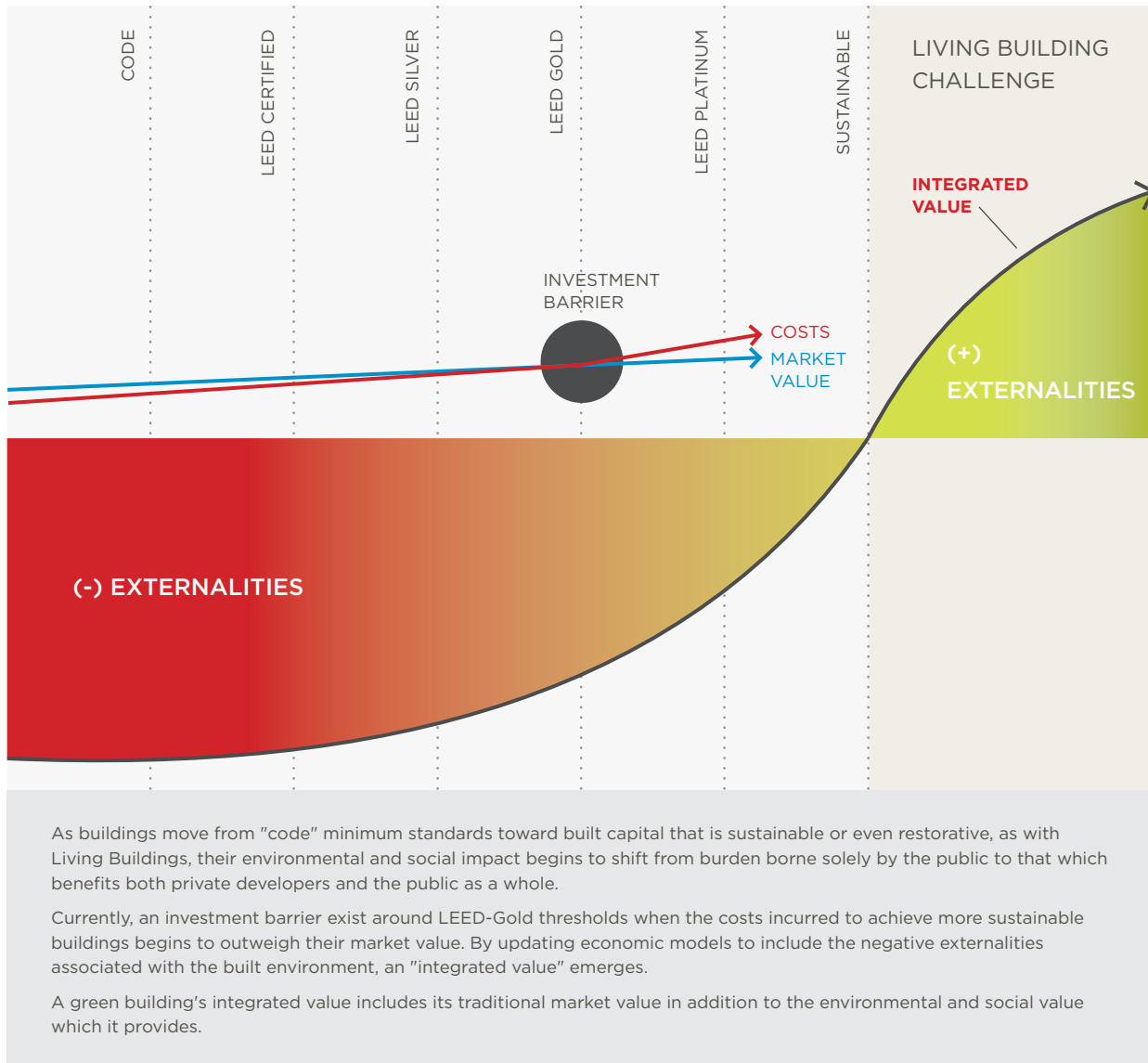
This concept serves as a bridge between existing valuation (and appraisal) models that by definition focus on current market value and more comprehensive, 21st century valuation models that explicitly account for the economic value of positive (and negative) ecological and social impacts resulting from buildings and infrastructure. It can be applied to existing buildings, retrofits, and new buildings alike.

This equation may be used in two different ways. In the first, we may think of Net Externalities – positive or negative – across several different types of capital. We seek to understand the impacts of a given building, district, or infrastructure project on Social Capital, Human Capital, Natural Capital, Built/Manufactured Capital, and Financial Capital accounts over time, and across a variety of relevant scales.

This extends the analytical rigor of current real estate decision-making, with its depth of financial and building-level design and construction models, to include social, human, and natural capital accounts in a transparent, defensible way. Ultimately, this can provide a comprehensive framework for evaluating real estate decisions, allowing different users (e.g. owners, lenders, government agencies) to weigh impacts on different forms of capital according to their own priorities, and without converting impacts to a single unit of measure.

The second way of using the equation requires those Net Externalities under consideration in a given situation to each be given an equivalent monetary value in order to directly drive the financial component of decision-making. Most work to date on understanding the correlation between high performance green building characteristics and value has focused on using large data sets of green buildings to develop statistical correlations between specific features (e.g. level of LEED™ certification, access to green space) and current market value. This important work needs to be *complemented* by efforts to use expanded analytical models to understand the magnitude of externalities – impacts to the other capital accounts – in order to evaluate future exposure to risk and liabilities as well as potential future upside. While these expanded analytical models have inevitable limitations due to the inherent complexities of measuring externalities or attempting to price what is perhaps better left un-priced (e.g. beauty or health), they can give us, with proper caveats, insight

¹⁶ See *The Economics of Change: Catalyzing the Investment Shift Toward a Restorative Built Environment* by Jason Twill, David Batker, Stuart Cowan, and Theddi Wright Chappell. Earth Economics: Tacoma, WA: 2011.



into potential financial impacts including value, internal rate of return, and discounted future cash flows.

SHIFTING INVESTMENT TOWARDS RESTORATIVE BUILDINGS USING INTEGRATED VALUE

As our built environments move along the sustainable design spectrum from code minimum standards toward "less bad" sustainable outcomes or even transcend the "neutral impact" threshold to restorative standards (i.e. generating positive externalities), their environmental and social impact begins to shift from a net negative burden borne solely by the public to a net positive benefit that



can be largely enjoyed by the public while offering owners enough incentives to stimulate deep green new construction and retrofits.

Currently, in the United States, an investment barrier exists around LEED™ Gold/Platinum thresholds, when the costs incurred to achieve more sustainable buildings appear to be no longer justified by increased market value recognition. The framework developed by the *Economics of Change* project offers a pathway to transcend this investment barrier and *support a shift of billions of dollars of real estate investment towards more restorative ecological and social outcomes*. However, the framework will become more effective when fully supported by rigorous underlying valuation algorithms and data sets.

The *Economics of Change* is currently developing an *Integrated Valuation Tool™*: an expanded analytical model based on an open-source software platform that will be compatible with current industry standard platforms such as ARGUS® and EXCEL, yet will provide visibility to a wide range of currently unrecognized ecological and social value layers.

- In the hands of private investors, the *Integrated Valuation Tool™* will demonstrate potential added income (from positive externalities) or losses (from negative externalities) that may occur in the medium to long-term through changes in policy, tenant preferences, etc., allowing owners to systematically evaluate risks, liabilities, and upside. This will influence and shift decision making towards outcomes that benefit both investors and the public.
- In the hands of investors, lenders, valuation professionals, and underwriters, the tool will serve as a means to facilitate broader due diligence analysis for acquisition, disposition and lending purposes, as well as a more appropriate value indicator for those market participants who incorporate a wider spectrum of considerations (economic, social and environmental) into both their investment decisions and institutional culture and mandates.
- In the hands of policymakers, the Tool will serve as a catalyst to support *integrated policy design* that will shepherd an era of full spectrum, true-cost, lifecycle accounting for buildings, districts, and communities. This will give new opportunities for the world's cities and towns to evolve in more socially and ecologically beneficial ways.
- In the hands of public and private project developers, the Tool will provide a transparent and credible accounting of neighborhood, city, and larger-scale benefits that can be used as the basis for negotiating public-private partnerships and mission-related investments.

Economics of Change has created a comprehensive taxonomy of ecological and social benefits (and costs) of the built environment. Some of these are shown schematically in the figure below as a sample “dashboard” of key project indicators that could be displayed by the software tool.

Standard templates will be used to describe, qualitatively and quantitatively, the *attributes* of green building features like vegetative roofs, natural ventilation, increased air quality through elimination of toxins, etc. in order to derive an assessment of ecological and social benefits (and costs) for a given



building or infrastructure project in a specified location. Traditional valuation metrics, along with appropriate methods from the field of ecological economics,¹⁷ will then be used to determine a range of equivalent economic values, taking into account demographic, climatic, and other site-specific factors as well as inherent uncertainties in the modeling process. These valuation algorithms will include:

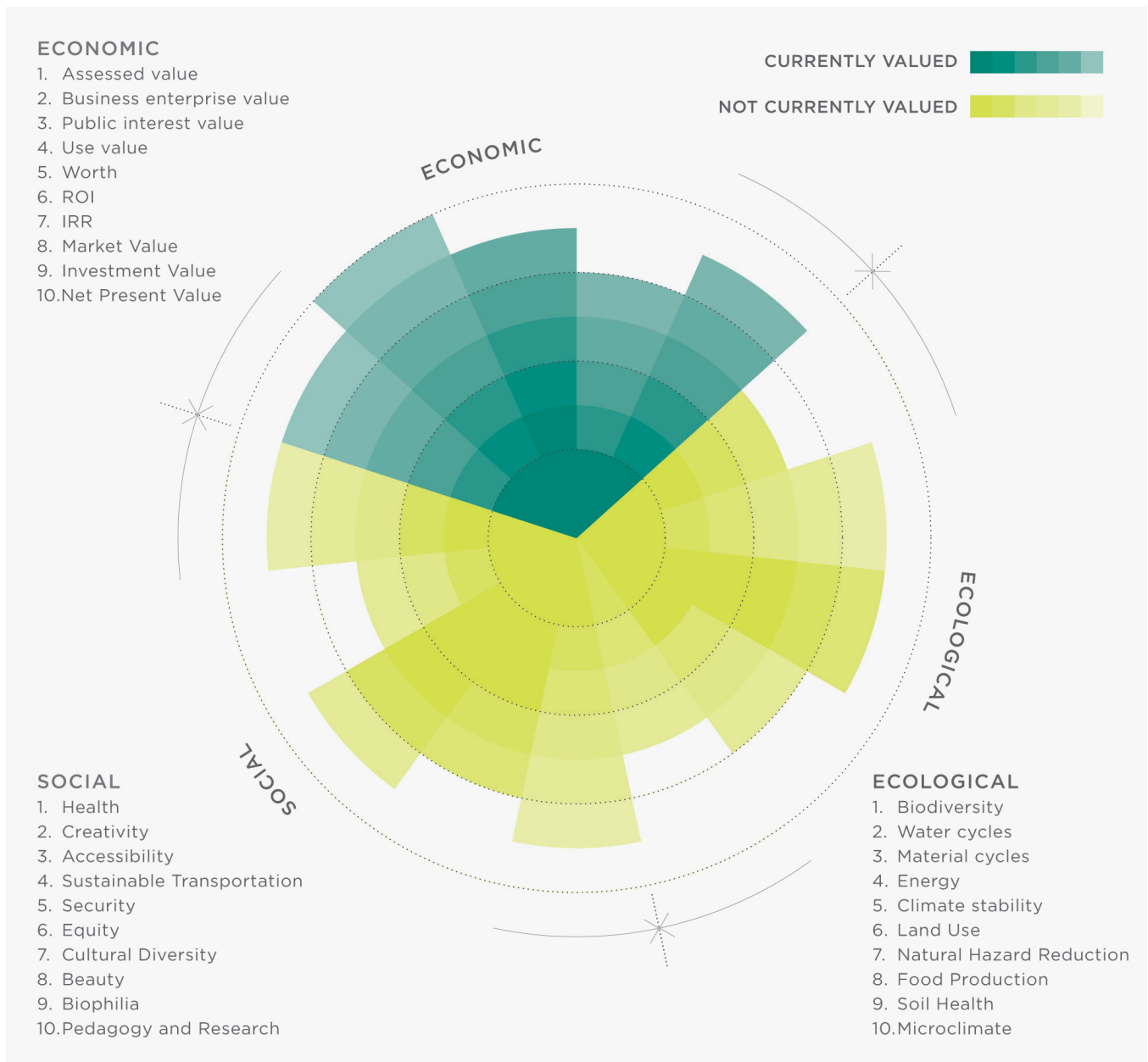
- *Hedonic pricing* (statistical modeling based on a sample set of existing buildings to determine the relative contribution to building market value of specific factors like proximity to open space or fresh food)
- *Market price-based approaches* when there are existing markets for benefits
- *Cost-based approaches* that estimate the cost to provide a benefit stream (e.g. occupant health and well-being) using other methods
- *Production function-based approaches, contingent valuation, choice modeling, group valuation,* and other widely accepted methods
- *Benefit transfer* techniques to extrapolate values from one geography to another

¹⁷ Ecological economics, with modern roots in the 1990s, extends the methods of neoclassical economics to provide a comprehensive approach to understanding tradeoffs and opportunities among Human, Social, Natural, Built, and Financial Capital within the fundamental biophysical constraints of the planet.



SAMPLE DASHBOARD OF INTEGRATED VALUE

Economics of Change will utilize a wide range of data sets to support and validate every aspect of the modeling process. These will include traditional valuation metrics (net operating incomes, cap rates, discount rates, tenant risk measures, etc.); building databases; ecological and social benefits derived from green features, systems, and whole buildings; bioclimatic data; demographic and health data; and a range of other modeling data.





TOWARD INTEGRATED POLICY DESIGN

INTEGRATED POLICY DESIGN

As the previous sections have shown, the built environment is inherently complex, linking financial, built, human, social, and natural capital over time and across scales ranging from individual buildings to districts, cities, and ultimately planetary biogeochemical cycles. *Integrated policy design* for a restorative built environment responds to this complexity directly, and suggests that effective policies should have the following characteristics:

Transparency. Provide detailed information on externalities (e.g. energy performance of existing buildings, toxicity of building materials) allowing all stakeholders to have a fuller picture of impacts across all Five Capitals.

Foster a Broader Concept of Value and Evaluation. Supplement market value with integrated value and other broader approaches to project evaluation in order to avoid an over-reliance on current market conditions at the expense of future risk and liabilities (negative externalities) and missed upside (positive externalities.)

Lifecycle. Measure buildings, infrastructure, and districts over their complete lifecycle, integrating financial and other capitals all the way through design, construction, long-term operations, and end of life decommissioning. This is particularly important in the public sector, where procurement processes often emphasize minimum first cost with operating costs relegated to a different budgeting process.

Unlock Value. Internalizing externalities through taxes, subsidies, incentives, or performance standards will immediately shift financial returns, transforming investment decisions.

Work Across Scales. Many studies have shown that restorative approaches to energy, water, materials, food security, biodiversity, etc. in the built environment tend to work optimally at different levels of scale. Policies should be “scale agnostic,” promoting performance standards that can be met flexibly at different scales.

Break Down Silos. In the built environment, energy, water, materials, site, public health, aesthetics, social equity, and other factors are deeply connected. For instance, worker productivity and health benefits from energy retrofits may dwarf direct energy savings. Whenever possible, policies should link a range of interrelated benefits, solving many problems at once.

The *Policy Recommendations* section of this report attempts to apply integrated policy design in a variety of areas.



EXISTING POLICY LANDSCAPE IN THE UNITED STATES

The role of government policies at the local, state and federal levels can play a significant role in the transition to a more sustainably built environment. Historical precedent has shown that government departments at all levels have been some of the first or, in fact the earliest, adopters of policies and implementers of practices that support this transition. While actual Federal policies remain limited to certain specific initiatives (renewables and energy efficiency, in the main), several government agencies/departments have adopted policies whereby they have selected to locate in or support the development/re-development of only those facilities that incorporate high standards of performance in the areas of energy efficiency, water conservation and other characteristics associated with “high performing buildings”.

These agencies/departments’ commitment to these higher standards has served both as examples for the broader market, as well as portents of things to come in the private sector. Within the United States, some of the most effective programs and policies have emanated from the Department of Energy (DOE), as well as the General Services Administration (GSA). While their internal programs are not technically “policies”, these programs have led to the adoption of policies promoting more sustainable development and re-development across the United States. A more in-depth discussion of these impacts will be provided in the sections that follow.

Policy creation at the state and local/municipal levels has been more prevalent, and the implementation of more sustainable policies is growing with increasing velocity. The Research Department of the United States Green Building Council (USGBC) has identified more than 500 different policies at the state and local levels addressing mandates and incentives related to LEED standards.¹⁸ Given our project’s focus on the five forms of capital analysis relative to the value implications and market impact of various policy strategies, those incorporating LEED standards are more closely aligned with not only the environmental factors of energy efficiency and possibly water conservation, but also other additional economic and social considerations.

The focus on energy efficiency and water conservation by a growing number of states and municipalities lays the groundwork for broader mandates and incentives as initial goals related to those factors are reached. Acknowledging the changing landscape in real estate markets and their related drivers, the Urban Land Institute (ULI) kicked off its *ULI Building Healthy Places Initiative*, with a special series of Advisory Services panels in three different communities in Colorado. As explained in one of the articles detailing their work¹⁹:

ULI is embarking on a novel, organization-wide program over the next two years that seeks to address one of the most compelling issues of our day – the health and fitness of populations – by guiding the design and creation of the built environments in which people live, work, shop and play.

These types of broader initiatives are expected to form the basis for future policy goals.

¹⁸ Interviews with Chris Pyke, VP Market Research USGBC and Maggie Comstock, USGBC, August 2013.

¹⁹ <http://urbanland.uli.org/Articles/2013/Aug/McMahonHealthy>. Learn more at ULI.org/health.



How existing and proposed policy can and will impact the transition to a more sustainable built environment is a key factor in this evolution. This section will identify and discuss current policies as well as introduce new approaches to facilitate even more innovative and transformational legislation.

FEDERAL LEVEL

DEPARTMENT OF ENERGY

With the Better Buildings initiative as a primary platform, the Department of Energy (DOE) continues to play an important role in the transition to a more sustainable built environment. Their ability to set compliance standards directly impacts various aspects of building performance, one of the most basic being building codes. Considered the most cost efficient and effective manner in which to drive market change, “codes effectively create the floor”²⁰ at or above which buildings, products and property types are required to function.

DOE’s Energy Star program has become the backbone of numerous legislative initiatives to increase energy efficiency, reduce carbon emissions, and improve building performance in both the commercial and residential sectors. Each and every one of the specific US cities discussed later in this paper have incorporated the Energy Start Portfolio Manager as the basis upon which their building stock will be assessed going forward.

Further, the DOE’s efforts in creating tools that will allow the private sector to better assess both building characteristics and potential upside relative to improving energy efficiency, as well as actual building performance in comparison to a broad competitive set, will provide significantly improved data upon which both financial and environmental decisions can be made.

Finally, the adoption and implementation of DOE’s Clean Cities Initiative focuses on reducing air pollution and related maladies, such as asthma, as well as overall impacts on human health.²¹ This initiative is representative of the broader spectrum of considerations DOE is embracing in their efforts to combat climate change and improve overall living conditions in the U.S.

IMPLICATIONS:

While not public policies per se, the compliance standards created by DOE to date have, in fact, served as the basis for a growing number of policy mandates in cities across the U.S. This trend is expected to continue and expand, broadening the impacts and potential implications of energy efficiency and carbon reduction. In addition, if DOE’s evaluation tools can provide consistent, accurate data on building characteristics and performance, they have an excellent chance of

²⁰ Interview with Maria Vargas, Deputy Director, OSAP at Department of Energy, August 22, 2013.

²¹ <http://energy.gov/public-services/vehicles/clean-cities>



becoming “standard” components of due diligence, upside, ongoing maintenance and acquisition/disposition analyses for both property owners and investors in the private sector.²²

GENERAL SERVICES ADMINISTRATION

Internal policies adopted by the General Services Administration (GSA) have had meaningful impacts not only on the properties they own and lease, but also on the markets in which they are

located. As the US government’s landlord, the GSA owns and/or leases some 9,600 real property assets, comprising more than 360 million square feet of workspace for more than one million federal employees. It also serves as a central procurement agency for the federal government and, as such, offers more than 12 million goods and services to other government agencies.

Their commitment to supporting President Obama’s sustainability plan has resulted in one of the most aggressive and far reaching commitments to energy and carbon reduction, coupled with social and environmental improvements, attempted by any government agency to date. The major points of their FY 2012 Strategic Sustainability Performance Plan²³ are highlighted below:

- GSA will design, construct, operate and maintain federal spaces to consume less energy and water; use clean, renewable sources of electricity and innovative energy and water efficiency technologies; be less reliant on grid electricity and more resilient to man-made or natural disasters; and reduce the total costs of ownership.
- GSA will select future site locations that strengthen the vitality and livability of the communities in which they are located and are pedestrian friendly and accessible to public transit.
- GSA will aggressively develop and offer sustainable solutions to its customers, helping them to meet their environmental and energy requirements while spending less on their operations.
- GSA will make it easier for federal agencies to identify, procure, track, and report sustainable products and services, and it will work with the federal vendor community to increase the quantity and availability of sustainable products and services while reducing their cost.
- GSA will strengthen resilience and secure mission critical federal property and supply chain investments through an iterative, incremental, and integrated climate change adaptation action plan. Through this approach, GSA is building capacity to better understand and address climate change adaptation with the intent to make the agency and its customer agencies robust, operationalizing adaptation into existing processes.
- GSA will use its sustainability initiatives to promote an evidence-driven performance culture that continuously assesses the viability of projects and identifies areas for improvement. This approach will drive the identification of synergies among service and staff offices; eliminate waste and redundancy; and provide improved transparency and oversight within agency operations.

²² For the Building Performance Database, see <http://buildings.energy.gov/BPD>.

²³ See http://www.gsa.gov/portal/mediald/162943/fileName/GSA_FY2012_Sustainability_Plan.



- GSA will share its experiences with federal agencies and the public to inform them about the benefits and costs of effective innovative technologies and business practices and catalyze their adoption.

IMPLICATIONS:

Given the depth and breadth of its reach into both the public and private sectors, as a major landlord, owner, lessee, service and product provider, the GSA's commitment to the foregoing goals and objectives cannot help but influence market change and adaptation, as well as catalyze the change to a more sustainable built environment.

ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) has publicly acknowledged the negative impacts of climate change and in response, enacted policies to actively combat its effects. Noting that human behavior is, in fact, a significant contributor to this problem, the EPA continues to focus on initiatives to minimize greenhouse gas emissions and their harmful effects through both national and international efforts.

With a common-sense approach to effecting change, the EPA has developed multiple programs and reporting initiatives to combat and overcome the negative impacts of climate change:

- EPA programs have been implemented to collect emissions data and use that information to reduce emissions and increase efficiency.
- Through voluntary energy and climate programs, EPA has partnered with the private sector to successfully reduce greenhouse gas emissions; in 2010 alone these partnerships were successful in reducing greenhouse gases by more than 345 million metric tons, the equivalent of emissions from 81 million vehicles, saving consumers and businesses more than \$21 billion.²⁴
- EPA has also partnered with States, localities and tribes to provide technical assistance, analytical tools and outreach support on climate change issues through their State and Local Climate and Energy Program.²⁵

IMPLICATIONS:

The goals set by the EPA in its wide-ranging legislative policies signal the Department's recognition that the climate/environmental, social and economic issues the US and our neighbors are facing go well beyond the need for merely energy efficient buildings. Creation and implementation of its Strategic Sustainability Performance Plan confirms EPA's realization that effective solutions to these issues will go well beyond traditional approaches.

²⁴ What EPA is Doing About Climate Change, www.epa.gov/climatechange, 2013.

²⁵ Ibid.



THE APPRAISAL FOUNDATION

Another entity with national (and international) influence on the value proposition for a more sustainable built environment is The Appraisal Foundation. Founded in 1986, the Foundation is a private, non-profit educational organization whose activities are overseen by the Appraisal Subcommittee. It was established in a time of great turmoil in the real estate markets when:

The instability in the real estate and mortgage lending professions led nine leading professional appraisal organizations in North America to form the Ad Hoc Committee on Uniform Standards of Professional Appraisal Practice. These groups agreed upon a generally accepted set of standards that were then adopted by the eight American appraisal organizations. With the adoption of the Standards, The Appraisal Foundation was established in 1987 to implement the Uniform Standards of Appraisal Practice (USPAP) through an independent board, the Appraisal Standards Boards (ASB). The Appraiser Qualifications Board (AQB) was later incorporated in the Foundation structure in order to facilitate the development of meaningful qualification criteria for appraisers.²⁶

The following excerpts from The Appraisal Foundation's website²⁷ further explain its role and responsibilities in the appraisal and real property worlds:

What is the relationship between The Appraisal Foundation and the Appraisal Subcommittee (ASC)?

These two entities are often confused by the public. The Appraisal Subcommittee is the federal agency charged with oversight of the state appraisal regulatory programs. In addition, the ASC is responsible for monitoring the activities of The Appraisal Foundation and the ASB and AQB as well as providing a federal grant to assist in the operations of these Boards.

What public charge does the Foundation have and how was it obtained?

In 1989 Congress enacted Title XI of the Financial Institutions Reform Recovery and Enforcement Act (FIRREA),²⁸ which established the current appraisal regulatory mechanism. As a result of the legislation, the Foundation has the following responsibilities: all certified appraisers must meet the qualification criteria established by the AQB; all state appraisal examinations must be reviewed and approved by the AQB; all appraisals for federally related transactions must conform to the Uniform Standards of Professional Appraisal Practice (USPAP) promulgated by the ASB.

The administration of USPAP, which serves as a standard for virtually all commercial real estate appraisals in North America, carries with it the responsibility of updating requirements and issuing guidelines for proper valuation practices, particularly in regard to new product types and market changes. To that end, on July 15, 2013, The Appraisal Foundation released for public comment an exposure draft entitled: *Valuation of Green Buildings: Background and Core Competency*.

The draft puts forward a number of guidelines on what constitutes the appropriate background, knowledge base and content that is required to competently value high performing green buildings.

²⁶ See www.appraisalfoundation.org.

²⁷ Ibid.

²⁸ First Exposure Draft - Valuation of Green Buildings: Background and Core Competency, www.appraisalfoundation.org, APB Exposure Draft Archives, 2013.



Though not mandates for the appraisal profession per se, it is possible that organizations either completing or ordering valuations on these types of properties will adopt these guidelines as criteria upon which to engage appraisers.

IMPLICATIONS:

This is the first document crafted by a nationally recognized and federally overseen organization to identify the type of content and the level of competency an appraiser should have prior to completing a valuation assignment on a high performing green building. Crafted in the form of “guidelines”, adoption of these protocols by major investors, pension funds and lending institutions could dramatically alter the approach taken to evaluate the “value proposition” presented by more sustainable development.

STATE LEVEL

State level policies are limited, but growing, and include both incentives and mandates. Similar to federal options, the current focus is primarily on energy efficiency and carbon reduction, though it is anticipated that as these programs grow and expand, so will their focus and the issues they address.

FEDERALLY SOURCED STATE INCENTIVES

Though federally sourced, details of numerous incentives and related policies that support renewables and energy efficiency initiatives are available at www.dsireusa.org. In addition to the information provided on various incentives available at the state level, DSIRE also includes quantitative information about various states’ renewable portfolio standards (RPS). Renewable Portfolio Standards are state-led regulations that require utilities to increase the production of energy from renewable sources, such as wind, solar, biomass, and geothermal within their territory. This is particularly important for those interested in solar and other renewables and ascertaining the most current requirements and incentives for these options.

In addition to these incentives, two states, California and Washington, have also enacted state-wide legislation mandating some form of energy benchmarking and disclosure. Details of these policies are presented below.

CALIFORNIA

California passed Assembly Bill 1103 (AB 1103) in October of 2007. This law requires nonresidential buildings to benchmark and disclose their energy performance if/when involved in a financial transaction. It further requires utilities to assist the owners by uploading energy consumption data on the buildings involved, upon the owner’s request. This initiative was complemented by the adoption



of several other executive mandates including, but not limited to, AB 758 which created a California-specific building performance rating and labeling program.²⁹

The legislation applies to nonresidential buildings over 5,000 SF and requires they rate their properties using Energy Star software. The law further requires owners to issue a Statement of Energy Performance to the California Energy Commission (CEC), as well as to prospective buyers, lenders or lessees prior to completing a transaction (lease or sale). The Statement of Energy Performance is valid for 120 days. Disclosures outside this time frame require the building be re-benchmarked and a new statement be issued.

Despite its passage in 2007, the mandates for utilities were not enacted until 2009 and for building owners in 2010. The most significant requirements having to do with benchmarking are being phased in. Phase 1, which applies to nonresidential buildings 50,000 SF and above, became effective July 1, 2013. Phasing will continue through January 1, 2014, ending with application to buildings between 5,000 and 9,999 SF.

California has also been a leader in utility deregulation by instituting policies which have created an environment where many utilities within the state are actually more incentive to invest in demand-side efficiencies than supply-side generation. California was an early adopter of a concept known as “decoupling”. In the electricity and gas sectors, “decoupling” (or “revenue decoupling”) is a generic term for a rate adjustment mechanism that separates (decouples) an electric or gas utility’s fixed cost recovery from the amount of electricity or gas it sells. Under decoupling, utilities collect revenues based on the regulatory determined revenue requirement, most often on a per customer basis. On a periodic basis revenues are “trued-up” to the predetermined revenue requirement using an automatic rate adjustment.³⁰

The financial health of most gas and electric utilities is tied directly to retail sales, because their fixed costs are recovered through charges based on how much people use. This creates little incentive for utilities to promote energy efficiency or distributed energy resources (small, modular energy technologies that can provide energy where needed) - or alter long-established rate designs and experiment with new service and price models.

Decoupling changes that because it helps keep the utilities “whole” when their customers are saving energy (and money) by making positive changes such as weatherizing their homes and businesses, upgrading to more efficient appliances and changing to better light bulbs. Because it’s the cleanest, cheapest energy resource available, efficiency helps avoid dirty power plants and fights climate change.

California’s decoupling approach, initially known as the Electric Rate Adjustment Mechanism (ERAM), was first implemented for Pacific Gas and Electric in 1982. ERAM applied to all customer classes and was subsequently implemented for the other electric companies in the state. In 1990, the PUC supplemented this mechanism with a system of performance-based financial incentives for the companies to promote additional cost-effective energy savings.

29 Policy Brief: State of California, www.BuildingRating.org, 2013.

30 Decoupling For Electric & Gas Utilities: Frequently Asked Questions, The National Association of Regulatory Utility Commissioners, 2007.



With California taking a lead, many other states have begun to follow suit. In a recent study commissioned by the American Council for an Energy-Efficient Economy (ACEEE), the Regulatory Assistance Project, and NRDC, industry expert Pamela Morgan reviewed how many states and utilities had moved to adopt this vital reform over the past decade, how it affected utility rates, and how often regulators combined decoupling with earnings adjustments for the utilities involved. The report showed that not only had 25 states adopted decoupling for at least one electric or natural gas utility by the end of 2012, but the rate impacts for consumers have been “small to miniscule” and in nearly two-fifths of the cases, produced refunds.³¹ Hopefully this study will send a signal for even more states to enact decoupling regulations.

WASHINGTON STATE

Known as the Energy First Bill, SB 5854 was signed into law in May of 2009. The law set forth commercial building rating and disclosure mandates, as well as requirements that the state’s energy code be improved; energy performance standards be created, and where necessary, public buildings be retrofitted. The bill’s provisions also included a requirement that the state recommend a methodology to rate the energy performance of homes.

Similar to California’s AB 1103, Washington’s legislation requires owners of nonresidential buildings exceeding 10,000 SF to rate their buildings using Energy Star software and disclose the findings to prospective lessees, lenders and/or buyers prior to the close of a financial transaction. Also similar to the California law, utilities are required, at the owner’s request, to upload their building’s energy consumption into Energy Star software.

Unlike the California legislation, requirements for public buildings are significantly more rigorous under Washington’s SB 5854. State agencies that lease space in privately-owned buildings are not allowed to sign a lease in a building with a (Energy Star) Portfolio Manager rating of less than 75, unless certain energy efficiency measures are implemented.³²

OREGON

Oregon, whose utilities offer a variety of energy incentives, took a different legislative approach to drive market transition to a more efficient built environment. With the passage of House Bill 2801 in July of 2013, Oregon became the first state to require appraisals include consideration of energy efficient improvements. Section 14 of the bill reads as follows:

When preparing, completing or issuing an opinion about the value of real property or an interest in real property as described in ORS 674.100 (1)(b), a state licensed appraiser or state certified appraiser shall consider improvements made to the structure of any building located on the real property that make the building more energy efficient.

Section 15 of the bill goes on to state:

³¹ Morgan, Pamela. A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs, and Observations, Graceful Systems LLC, February 2013

³² Policy Brief: Washington State, www.BuildingRating.org, 2013.



The Appraiser Certification and Licensure Board shall determine ways to improve the education of state licensed appraisers and state certified appraisers with respect to assessing the value of improvements made to the structure of a building that make the building more energy efficient and consider the implementation of a program whereby state licensed appraisers and state certified appraisers obtain certification for purposes of preparing, completing and issuing an opinion on the value of the improvements made to the structure of a building that make the building more energy efficient.

IMPLICATIONS:

These new and evolving laws clearly expands the value proposition for properties that incorporate more energy efficient strategies. It further requires the state agency tasked with oversight of the appraisal profession in Oregon to provide adequate educational training for appraisers to complete valuations of such properties competently. This legislation will likely serve as an example that other states will follow in an effort to ensure proper consideration be given to more sustainable building/property characteristics.

MUNICIPAL LEVEL

According to research completed by the US Green Building Council there are more than 500 policies requiring some level of LEED compliance currently on the books in US cities and counties, with a nominal number also at the state level.³³ While most of these policies primarily impact public buildings, a growing number also incorporate requirements for the private sector as well. Though very inconsistent in which aspects of LEED they incorporate and how the policies are implemented, the number of policies that has been enacted is substantial, and growing. The sheer increase in numbers is a positive indicator that awareness of a broader set of sustainability objectives is expanding, as are the considerations these policies address.

Also significant, but more limited in scope, is the growing number of US cities that have enacted specific mandates requiring buildings be rated on the basis of their energy efficiency. The policies vary on a range of factors, including building type (residential and/or commercial), level of transparency, and types and degree of reporting requirements. A number of these policies are part of broader, strategic initiatives by the cities to address larger issues; for example, Philadelphia Mayor Michael Nutter's "ambitious plan to improve the city's energy, environment, equity, economy, and engagement with the goal of becoming the greenest city in America by 2015".³⁴

A listing of cities that currently have such policies (as of October 2013) and brief descriptions of what they include are presented in the discussions that follow.

³³ Interviews: Maggie Comstock, USGBC and Christopher Pyke, VP Market Research, USGBC, August 2013.

³⁴ Policy Brief: Philadelphia, Ibid. 2013.



AUSTIN, TEXAS

Passed in 2008, Austin's Energy Conservation Audit and Disclosure Ordinance requires building energy audits and upgrades, as well as commercial building ratings and disclosure mandates. The ordinance was a collaboration between the Austin Energy Efficiency Retrofit Task Force, local realtors and other engaged stakeholders. The policy required that residences with four or fewer units, including single-family homes, must complete energy audits prior to a sale of the property and that the results be made available to the prospective purchasers.

Mandates for apartment buildings older than 10 years were also enacted, requiring any property consuming more than 150% of the average energy use of other multi-family units in Austin to complete an energy retrofit within 18 months to reduce energy use to within 110% of the average.

In addition, commercial (nonresidential) buildings over 10,000 square feet were required to be benchmarked using either Energy Star Portfolio Manager or the Austin Energy Business Energy Analysis Tool. Further, the results must be divulged to any prospective buyer prior to signing a contract for sale and to Austin Energy within 30 days of closing the transaction.

The staged legislation began its first phase on June 1, 2012 for buildings of 75,000 square feet and larger, and completes implementation for buildings from 10,000 to 29,999 square feet on June 1, 2014.³⁵

BOSTON, MASSACHUSETTS

In May 2013, Boston adopted policies requiring larger commercial buildings, as well as specified types/sizes of residential buildings, to report their energy and water use, which information will be made available to the public.

Similar to Seattle and San Francisco, the legislation includes reporting mandates only, with no actual requirements that any action be taken by building owners to improve performance. Rather, the strategy is to allow "the market" and public sentiment to influence building owner action. Given that New York City's Greener Greater Buildings Plan, which does include mandatory energy audits, achieved 80% compliance in its commercial sector in the first year of operation, compared to only 30% by the Seattle and San Francisco building communities – where their legislation was also limited to reporting only – the potential to effect significant change via reporting only is somewhat questionable.

That said, the fact that Boston is taking positive measures to increase transparency into the performance of its building sectors with the belief that added transparency will increase investment: "What's needed to meaningfully increase the flow of capital in this direction is the means to finally evaluate energy investments by traditional investment measures."³⁶

Following the lead of other major US cities that have enacted similar legislation, the policies will become effective via staged implementation, starting with public buildings, then moving from larger

³⁵ Policy Brief: Austin, www.BuildingRating.org.

³⁶ Boston becomes latest city to order building energy benchmarking, www.greenbiz.com



to smaller sized commercial buildings, then the residential sector. Energy Star's Portfolio Manager will be the mechanism used and will be complemented by greenhouse gas emissions reporting as well.

CHICAGO, ILLINOIS

Chicago adopted its Sustainable Chicago 2015 Action Agenda in September of 2012. The plan incorporates seven themes and 100 action items with energy efficiency, emissions reductions and economic development representing key components.

Complementing its long-standing disclosure policies for residential buildings, the City Council more recently passed the Chicago Energy Use Benchmarking Ordinance in September 2013. Similar to legislation in the other major US cities that have adopted comparable policies, implementation of the mandates are staged over a multi-year period (2014-2016) and apply first to larger commercial, then residential buildings, then to smaller structures.

Several building types are exempted: industrial, storage units and hazardous waste facilities. Properties under construction or experiencing financial distress can also be exempted. Those affected will be required to benchmark energy performance via Energy Star's Portfolio Manager and report findings to the City, where a municipal website will show performance on an annual basis.

It is anticipated that these policies will affect more than 900 million square feet of real estate, making Chicago second only to New York City in the impact of such legislation.³⁷

NEW YORK CITY, NEW YORK

Passed on December 9, 2009, the Greener Greater Buildings Plan (GGBP) was designed to reduce the city's greenhouse gas emissions 30% by 2030. Acknowledging that approximately 80% of New York's carbon emissions result from the built environment and that an estimated 85% of its existing buildings will still be in use in 2030, this progressive plan was overwhelmingly approved by New York's City Council.

The Plan was comprised of four separate energy efficiency bills that required:

- Benchmarking and public disclosure of building energy performance and water consumption;
- Periodic energy audits and retro-commissioning, as indicated;
- Sub-metering of large tenant spaces;
- Lighting upgrades; and
- Improvements to the City's energy code.

Similar to Austin's legislation, the GGBP requires annual benchmarking via EPA's Energy Star, as well as public disclosure of the results. Results are reported through the Energy Star Portfolio Manager in a "Compliance Report" that is then filed with the New York City Department of Finance. Findings are then uploaded to an online database that is maintained by the City and available to interested parties.

³⁷ Policy Brief: Chicago, www.BuildingRating.org.



The reports include a building's Energy Use Intensity (EUI) rating, as well as its water consumption. Utilities are expected to facilitate the rating process by uploading utility bills into Energy Star.

Public buildings larger than 10,000 square feet are subject to the requirements, as are private buildings larger than 50,000 square feet. The public sector mandates were enacted in May of 2010 and those for the private sector in May of 2011. Based on the parameters of the legislation, some 2.5 billion square feet will be impacted – or approximately half of the City's existing building stock.

One of the most significant aspects of the Plan is the transparency it provides into building energy and water performance. Having the benchmarking findings posted to an online database is a major increase in the level of transparency available to existing and potential tenants, as well as possible purchasers.³⁸

PHILADELPHIA, PENNSYLVANIA

Upon his election in 2008, Mayor Michael Nutter established the Mayor's Office of Sustainability. Out of this Office came "Greenworks Philadelphia", an ambitious plan to improve the City's energy use, environmental status, social equity and economy – all within the context of becoming the nation's greenest city.

Adoption of this plan was followed in 2012 by the introduction of Bill No. 120428, legislation that requires all commercial buildings in Philadelphia over 50,000 square feet (excluding multi-family) to benchmark and disclose their energy and water use. Along with the other cities that have undertaken such a plan, Philadelphia also requires buildings impacted by this legislation to use Energy Star Portfolio Manager as their reporting tool.³⁹

SAN FRANCISCO, CALIFORNIA

San Francisco's Board of Supervisors passed its Existing Commercial Buildings Energy Performance Ordinance in February 2011. Similar to other municipalities with comparable mandates, the ordinance requires annual benchmarking, periodic energy audits and public disclosure of the benchmarking results on nonresidential buildings.

The ordinance was based on work generated by the City's Task Force on Existing Commercial Buildings, a group created to develop and make recommendations to reduce energy consumption and carbon emissions; improve the reliability of electricity transmission; and enhance the competitiveness of the city's existing building stock.

Nonresidential buildings over 10,000 square feet are subject to the legislation and the reporting mechanism is Energy Star Portfolio Manager. Benchmarking results are provided to the San Francisco Department of Environment and then posted on an online database, which is publicly accessible. The one exception to the process is the very first score for any building, which is kept confidential to ensure building owners understand the process and have a chance to improve building performance.

³⁸ Policy Brief: New York, www.BuildingRating.org.

³⁹ Policy Brief: Philadelphia, www.BuildingRating.org.



Like some of the other cities with similar legislation, compliance deadlines were set based on building size, beginning with buildings over 50,000 square feet, then reducing down annually to those sized 10,000 to 24,999 square feet.⁴⁰

WASHINGTON, DC

Washington, DC was the first major US city to enact a mandatory benchmarking and disclosure policy in August 2008. Its Clean and Affordable Energy Act of 2008 required annual measurement and public disclosure of energy performance in large commercial buildings (over 100,000 square feet) initially, with staged enforcement for progressively smaller commercial buildings through April 2014.

The law further required the use of Energy Star software as the reporting mechanism, with ultimate application to all commercial and multi-family structures over 50,000 square feet and public buildings of at least 10,000 square feet. These requirements also apply to large construction and/or renovation projects of at least 50,000 square feet.⁴¹

IMPLICATIONS:

It should also be noted that each of the cities noted above also have some level of mandatory adoption of LEED™ standards into either or both their public and private building sector code requirements. When viewed in context of catalyzing the shift to a more sustainable built environment, it is imperative that all US cities go beyond simply adopting an Energy Star mandate, as it addresses just a single aspect of a more sustainable built environment.

- Only those counties and cities requiring some level of LEED compliance really facilitate greater possibilities to incorporate social and environmental aspects, along with fundamental economic considerations.

A “CLIMATE” TALE OF TWO CITIES: EXAMPLES OF INTEGRATED POLICY APPROACHES IN SEATTLE, WASHINGTON AND PORTLAND, OREGON

As two eco-centric pioneering cities, Seattle and Portland have demonstrated tremendous civic leadership over the past few decades by setting policy agendas to support and catalyze the green building movement. As early adopters, these cities have learned the intricacies and inter-connected nature of aligning social, environmental and economic goals to advance sustainable urbanism. Through various pilots, they have harvested lessons-learned and honed their approaches to policy development which demonstrate how proper integration among city agencies and between the public and private sector can turn aspiration into reality.

40 Policy Brief: San Francisco, www.BuildingRating.org.

41 Policy Brief: Washington, DC, www.BuildingRating.org.



The following section highlights the inception, adoption and continuing evolution of Climate Action Plans in both Seattle and Portland detailing their goals and strategies for achieving carbon neutrality at the city scale.

PORTLAND, OREGON CLIMATE ACTION PLAN

In 1993, Portland became the first municipality in the US to adopt a plan to directly deal with global warming. In 2001, Multnomah County joined the City of Portland in approving an amended plan, the Local Action Plan on Global Warming. Then in 2009, the City and County finalized a third, more expansive approach in their joint Climate Action Plan.

Reaching far beyond those local governments that have focused primarily on the adoption of energy mandates (as admirable as they may be), Portland and Multnomah County's Plan incorporates a much broader range of goals and objectives. To date, they have made steady progress in 18 measurable 2030 goals in eight primary areas of concentration:

1. Buildings and Energy
2. Urban Form and Mobility
3. Consumption and Solid Waste
4. Urban Forestry and Natural Systems
5. Food and Agriculture
6. Community Engagement
7. Climate Change Preparation
8. Local Government Operations⁴²

As examples, since 2009 when the current Plan was adopted:

- More than 1,000 homes have been weatherized through Clean Energy Works Oregon
- More than 1,400 homes and businesses have installed solar panels
- Nearly 150,000 households can now compost food scraps at the curb
- The number of bicyclists has increased by 14%.⁴³

These actions complement successes in other areas of climate action, including a 26% reduction in carbon emissions per person since 1990. The positive effects of this statistic are further reflected

⁴² Climate Action Plan 2009 - Year Two Progress Report, Bureau of Planning and Sustainability; Office of Sustainability, April 2012. www.portlandoregon.gov/bps/article/393345

⁴³ Ibid



in the fact that carbon emissions in 2010 fell below 1990 levels, despite continued population growth in both the city and county.

Utilization of a broad-based approach to community and governmental action and goal setting, including not only energy policies, but also a range of additional, strategic initiatives, is reflected in the Plan's Overview section of the report. Referring to the progress made to date in achieving Plan objectives:

These efforts are having an impact: driving down carbon emissions while creating jobs, advancing social equity, keeping dollars in the local community and making our neighborhoods more vibrant and livable. Portland and Multnomah County have made real progress in carrying out the Climate Action Plan, and much work still lies ahead.⁴⁴

The 18 measurable 2030 goals the Climate Action Plan is tracking are summarized below:

Energy:

1. Reduce the total energy use of all buildings built before 2010 by 25%.
2. Achieve net zero greenhouse gas emissions in all new buildings and homes.
3. Produce 10% of the total energy used within Multnomah County from on-site renewable sources and clean district energy systems.
4. Ensure that new buildings and major remodels can adapt to the changing climate.

Urban Form and Mobility:

5. Create vibrant neighborhoods where 90% of Portland residents and 80% of Multnomah County residents can easily walk or bicycle to meet all basic daily, non-work needs and have safe pedestrian or bicycle access to transit.
6. Reduce per capita daily vehicle-miles traveled (VMTs) by 30% from 2008 levels.
7. Improve the efficiency of freight movement within and through the Portland metropolitan area.
8. Increase the average fuel efficiency of passenger vehicles to 40 miles per gallon and improve performance of the road system.
9. Reduce the lifecycle greenhouse gas emissions of transportation fuels by 20%.

Consumption and Solid Waste:

10. Reduce total solid waste generated by 25%.
11. Recover 90% of all waste generated.
12. Reduce the greenhouse gas impacts of the waste collection system by 40%.

⁴⁴ Ibid.



Urban Forestry and Natural Systems:

13. Enhance the urban forest canopy to cover one-third of Portland, and at least 50% of total stream and river length in the city meet urban water temperature goals as an indicator of watershed health.

Food and Agriculture:

14. Reduce consumption of carbon-intensive foods.

15. Significantly increase the consumption of local food.

Community Engagement:

16. Motivate all Multnomah County residents and businesses to change their behavior in ways that reduce carbon emissions.

Climate Change Preparation:

17. Adapt successfully to a changing climate.

Local Government Operations:

18. Reduce carbon emissions from City and County operations 50% from 1990 levels.

IMPLICATIONS:

Portland's strategic approach to address climate change and improve the economic, social and environmental status of its residents could serve as an example and standard for other communities throughout the US and possibly internationally.

SEATTLE, WASHINGTON CLIMATE ACTION PLAN

Similar to Portland, Seattle has a history of innovation in the area of climate change and preparation. Through a series of pioneering initiatives, the City of Seattle has proven itself to be one of the most forward-thinking municipalities in the areas of climate change and community improvement in the US. The following timeline summarizes some of the initiatives undertaken:

2000 - Seattle became the first US city to adopt a green building goal for all municipal facilities

2001 - The City created its LEED incentive program for the private sector

2005 - Seattle City Light became the nation's first large electric utility to be carbon neutral

2005 - Mayor Nickels launched the Mayor's Climate Protection Initiative

He then challenged other US mayors to join him in a goal to meet the GHG emission reductions put forth in the Kyoto Protocol - 7% below 1990 levels by 2012.



More than 1,000 mayors representing nearly 89 million Americans joined the challenge

2006 - Seattle adopted their Climate Action Plan (CAP), one of the first in the nation

2011 - The Mayor and City Council broadened the goals of CAP even further

2013 - The Mayor and City Council once again updated and expanded the City's CAP

"The 2013 CAP provides a coordinated strategy for action that cuts across City Functions, and focuses on City actions that reduce GHG emissions while also supporting other community goals, including building vibrant neighborhoods, fostering economic prosperity, and enhancing social equity."⁴⁵

Seattle's CAP focuses on three areas where the City deemed most action was required: road transportation, building energy and waste. The Plan is organized according to which goals should be met by certain dates. Currently actions fall into two categories: those requiring implementation by 2015 and others which need to be completed by 2030.

Implementation of the overall CAP will be accomplished by the collaboration of multiple government agencies through their adoption and implementation of four main action plans:

1. Transportation and Land Use Plans
2. Building Energy Plans
3. Waste Plans
4. Preparing for Climate Change-Related Plans

These four plans are further delineated into even more specifically oriented action plans to be undertaken by the relevant government agencies.

Each "sub-plan" is assigned to the appropriate agency, along with specific metrics, or "Climate Outcome Indicators", to track their progress. The various sub-plans and policy recommendations are listed in Appendix 2, under the relevant main areas of focus to which they apply.

IMPLICATIONS:

Clearly, Seattle has gone well beyond the majority of other US cities (Portland, OR being one of the few exceptions, if not the only one) in assessing the needs associated with climate change and

creating measurable, implementable goals to address the challenges ahead. Similar to Portland, Seattle's CAP 2013 can serve as both a standard and example of integrated policy approaches for other US cities.

45 City of Seattle Climate Action Plan 2013 at: http://www.seattle.gov/environment/climate_plan.htm.



GREEN BUILDING INCENTIVE TRENDS - WHAT WORKS AND WHAT DOESN'T?

In addition to mandates (sticks), developers, architects and government groups have long believed in the effectiveness of their complement – incentives (carrots) to gain traction for various initiatives in the marketplace. Research completed by the American Institute of Architects (AIA) in collaboration with the National Association of Counties (NACo) and published in March 2012 identified the incentives most preferred by developers and other private sector stakeholders as well as which incentives have been most effective to date in supporting green building and related sustainability objectives.

Through a series of actual case studies that investigated the different types of incentives provided by nine selected communities located across the US, the study was able to gather actual data on preferences and priorities regarding both different types of incentives, as well as their associated challenges and benefits. A brief summary of the salient points of the study is presented in the paragraphs that follow. The complete study can be downloaded from the NACo website at: www.naco.org.

There is a fairly wide variety of incentives available to the private sector through both state and local governments. These range from options that are low- to virtually no-cost to local municipalities, to those that require a direct, and sometimes considerable, financial commitment by the local government. The incentives most commonly offered by local governments across the US include:

- Tax incentives
- Density bonuses
- Expedited permitting
- Net metering
- Feed-in tariffs
- Grants
- Loans
- Insurance
- Technical/Design assistance
- Permit/zone fee reductions
- Rebates and Discounts on environmental products, and
- Leasing assistance.



Of the options presented above, those found to be most preferred by the private sector are the first three, listed below in the order of preference:

1. Tax incentives
2. Density bonuses
3. Expedited permitting

The study results further showed that “local governments have also found that the most effective way to extend the life of incentive programs is to leverage private money through loan programs.”

And finally, when it came to selecting the most appropriate incentives for a particular municipality, the study found that green incentives work best when they are based on a sound methodology combined with robust advocacy efforts and strong support from the public. When either developing or implementing green building incentives, local governments should weigh the potential effectiveness of the incentive against the following key criteria:

- Financial costs
- Oversight structure
- Local political and cultural environment
- Limits to power; and
- Industry engagement

Overall, the study serves as a valuable tool and primer for any stakeholder wishing to investigate options for incentives and assess the potential of their effectiveness and feasibility.



POLICY RECOMMENDATIONS

APPLY BROADER CONCEPTS OF VALUE

An appraisal, analysis or evaluation employing Integrated Value will enhance transparency and allow lenders, investors, developers, public agencies, and others concerned with real estate to make informed decisions based on a wide range of value across all five types of capital.

Traditional valuation methodology relies primarily on Market Value, a concept employed universally by investors, lenders, underwriters and valuation professionals when estimating property values. A commonly used definition of Market Value is as follows:

The most probable price (in terms of money) which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby: the buyer and seller are typically motivated; both parties are well informed or well advised, and acting in what they consider their best interests; a reasonable time is allowed for exposure in the open market ... and the price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.⁴⁶

As can be seen in the foregoing definition, there are clearly prescribed specifications for a value estimate to be considered “Market”. Given the inherent limitations of this term, it is our premise that a broader set of parameters should be included when assessing and estimating the full range of costs and benefits inherent in both the five forms of capital and those associated with a more sustainable built environment. To that end, we offer the following suggestions for the implementation of “Integrated Value”, which would more accurately reflect this full range of considerations:

- For properties being appraised or evaluated for acquisition or disposition, develop an appraisal methodology premised on the basis of Integrated Value that incorporates consideration of ecological and social costs and benefits, in addition to pertinent economic factors.
- Develop comprehensive examples of this type of approach and make these available to relevant market participants: investors, developers, lenders, appraisers, underwriters, and other stakeholders wishing to evaluate properties using a completely integrated analysis that includes economic, social and environmental considerations.
- Create appropriate training modules for appraisers, lenders, underwriters and brokers as well as other relevant market participants that qualify for continuing education credits in each respective industry and promote these through the respective professional and/or trade organizations.
- Ensure training includes development of shared standards and protocols for quantifying and/or monetizing broader ecological and social benefits and how these factors should be incorporated into valuation, evaluation and appraisal practices.

⁴⁶ http://en.wikipedia.org/wiki/Market_value#Real_estate



- Incorporate these standards and protocols into the Integrated Valuation Tool™ under development by the Economics of Change project and leverage Tool to evolve current Income Capitalization Approach to valuing real estate.
- Develop a complementary program for institutional, corporate and other general types of investors and developers that promotes utilization of the Integrated Valuation process and model to more accurately take account of all applicable externalities and ensure investment decisions appropriately incorporate a full spectrum of social, environmental and economic costs and benefits.
- Encourage developers to use Integrated Appraisals and evaluations early in the integrated design process to get insight into longer-term value enhancement potential, rather than only using appraisals and evaluations when the design is essentially frozen.
- Link valuation and investment models to industry standard design software programs such as Autodesk Revit® to visually demonstrate enhanced outcomes and to provide integrated valuation modules that seamlessly link to emerging integrated cost estimating modules.
- Investigate and potentially pursue collaborative relationships with other organizations also working on the transition to a more sustainable built environment, as well as other complementary goals. Potential candidates include: The Appraisal Foundation, Urban Land Institute (ULI), U.S. Department of Energy, Centers for Disease Control and Prevention, U.S. Environmental Protection Agency, Rocky Mountain Institute, The Institute for Market Transformation, The Tellus Institute, the Natural Resources Defense Council, Brookings Institute, select Universities and professional real estate and lending organizations throughout the country.

NEW ACCOUNTING AND REPORTING RULES AND STANDARDS

Ongoing research into the changing accounting landscape is an important aspect of the Economics of Change project. In order to accommodate more expansive corporate social responsibility (CSR) goals and new value metrics mandated by the shift to a more sustainable built environment, a number of new national and international initiatives have been created, along with supporting organizations to achieve their goals and objectives. Many of these groups not only recognize the need for more comprehensive, integrated approaches to evaluating and valuing a more sustainable built environment, but are prepared to participate in the development of the most effective and appropriate practices and policies by which this will be achieved. The following list includes several of the organizations whose work the Economics of Change will continue to monitor as we proceed with our own analyses:

- Benefit or “B” Corporation certification and reporting standards for businesses.⁴⁷
- Global Impact Investing Rating System reporting standards for businesses and investment funds.⁴⁸

⁴⁷ See www.bcorporation.net.

⁴⁸ See <http://giirs.org>.



- The International Integrated Reporting Council is a global coalition of regulators, investors, companies, standard setters, the accounting profession and NGOs sharing the view that communication about business' value creation across multiple forms of capital should be the next step in the evolution of corporate reporting.⁴⁹
- The European Commission Beyond GDP Initiative is about developing indicators that are as clear and appealing as GDP, but more inclusive of environmental and social aspects of progress. The Initiative provides useful definitions of a variety of terms⁵⁰:
 - **Gross domestic product (GDP)** - The Gross Domestic Product is the sum of the market value of all final goods and services produced in a country in a given period. GDP per capita has traditionally been used to illustrate a country's material standard of living, but today its usage is meeting increased criticism.
 - **Enlarged GDP** - Enlarged GDP indicators start from GDP but adjust for some of its limitations to deliver a more comprehensive overview of a country's wealth or wellbeing.
 - **Social indicators** - Social indicators give insights into a broad range of social issues, concerns and trends such as life expectancy, poverty rates, unemployment rates, disposable income, and education levels, etc. They are also used to give insights into broader notions of social progress.
 - **Environmental indicators** - Environmental indicators cast light over the state and development of issues such as natural resources, environmental pollution and waste, as well as related issues such as human health.
 - **Well-being** - Well-being indicators are used to broadly illustrate people's general satisfaction with life, or give a more nuanced picture of well-being in relation to their jobs, family life, health conditions, and standards of living.
- The Genuine Progress Indicator provides 26 indicators for the United States that consolidate critical economic, environmental, and social factors into a single framework in order to generate a more comprehensive picture than GDP.⁵¹
- The Sustainable Accounting Standards Board (SASB) is working to embed sustainability accounting into corporate practices to evaluate the environmental, social, and governance performance of companies through an analysis of their management of various forms of non-financial capital associated with sustainability- environmental, human and social - and corporate governance issues, which they rely upon for sustained, long-term value creation.⁵²
- There are a variety of international initiatives to have accounting standards incorporate human, social, and natural capital. These are likely to gradually play out in both the Financial Accounting Standards Board (FASB, for companies) and the Governmental Accounting Standards Board (GASB) in the United States, and may hasten the shift towards integrated value.⁵³

49 See www.theiirc.org.

50 See http://ec.europa.eu/environment/beyond_gdp/indicators_en.html.

51 See <http://genuineprogress.net>.

52 See <http://www.sasb.org/>

53 See www.fasb.org for FASB and www.gasb.org for GASB.

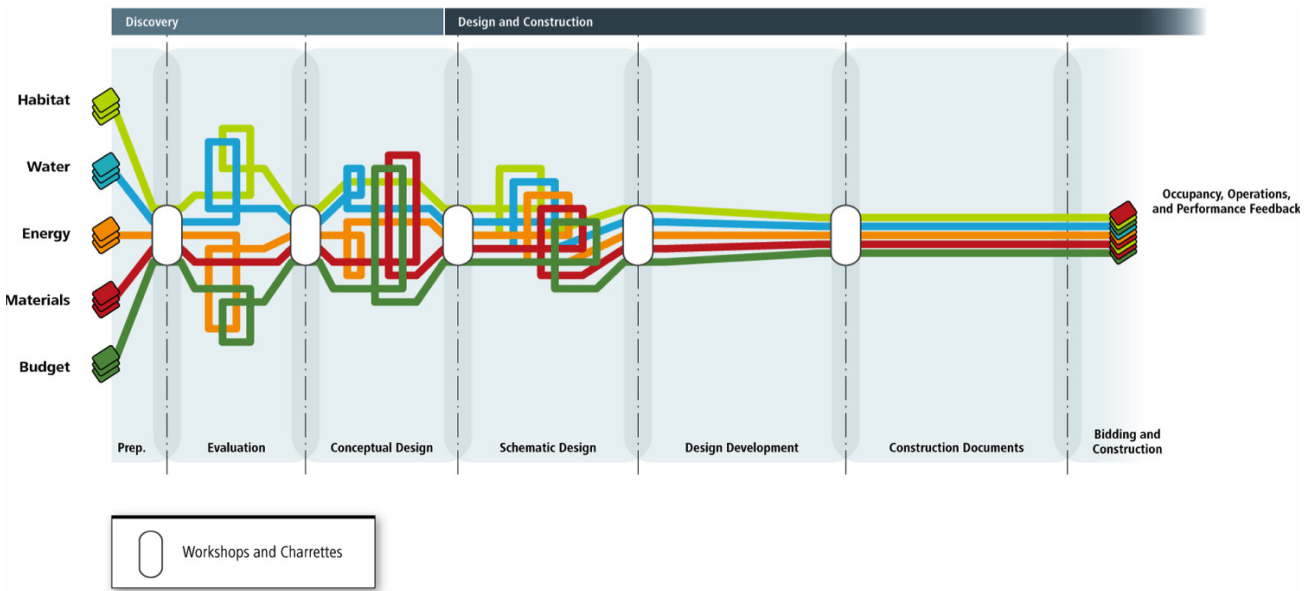


INTEGRATED DESIGN PROCESS STANDARDS

In conjunction with unlocking additional value, the Economics of Change project aims to concurrently eliminate the current “green premium” mentality within the real estate investment community. By supporting the adoption of advanced design and delivery frameworks and new cost estimating standards, the learning curve of the industry will progress to a point where ultra-efficient structures can be accomplished for the same, or less, cost than a conventional (i.e. code minimum) ones. The connection between the upfront capital cost efficiency of sustainable features to the increased asset value of those same features is critical to our work.

In an effort to advance the understanding and approach to sustainable development, a committee of building industry practitioners gathered in Chicago in 2005 to begin a dialogue on how to offer the marketplace a document that could codify the meaning, structure, and practice of an Integrated Design Process (IDP).

Integrative Design Process by 7 Group and Bill Reed (graphics by Corey Johnston)⁵⁴



In addition, this industry stakeholder group, lead by the Institute for Market Transformation to Sustainability (MTS), created the first standard guideline to provide designers, engineers, builders, facilities managers, and owners with a framework for achieving enhanced sustainability outcomes at lower cost and risk. This guideline was further approved as a national standard through the American National Standards Institute (ANSI) in 2007 under the title *Whole Systems Integrated Process Guide*

⁵⁴ 7Group and Bill Reed, *The Integrative Design Guide to Green Building*. John Wiley & Sons, Inc. Hoboken, New Jersey. 2009.



for Sustainable Buildings and Communities. In 2009, the 7 Group and Bill Reed, published *The Integrative Design Guide to Green Building* to serve a valuable guide for the building industry.

In the years following its first approval, this standard was further refined in collaboration with the American Institute of Architects (AIA), the Lean Construction Institute, the National Institute of Building Sciences and a wide range of industry professionals. This work resulted in the 2011 approval and release of a 2.0 version of the ANSI standard aptly re-titled the *Integrative Process Standard for Design and Construction of Sustainable Buildings and Communities*.

The industry's adoption of the ANSI Integrated Process Standard as common practice is critical to further advancing the ability of real estate, design and construction practitioners to deliver sustainable buildings and infrastructure within feasible budgets and risk profiles. The ability to "tunnel through the cost barriers" will only be ingrained within the design and construction communities through further education and embedding the Integrative Process Standard within existing rating tools, regulatory codes, and municipal planning and approval procedures. The United States Green Building Council (USGBC) has demonstrated leadership by taking an initial step to do so by incorporating the Integrative Process Standard as a new credit within the soon to be released LEED™ V4 rating tool (November 2013).

Building off USGBC's efforts, the *Economics of Change* projects seeks to support further adoption of the standard through strategic engagement and education opportunities with key industry stakeholders. Some progress has been made here through a recent partnership between the authors of the standard and the Urban Land Institute, the largest nonprofit research and education organization dedicated to the real estate industry. Education modules were developed and tested in two markets within the United States.

Other avenues the project team will explore are embedding elements of the process standard into the International Building Code (IBC) and municipal planning and permitting procedures. Efforts in this regard have already commenced in Seattle, Washington to demonstrate the effectiveness of a city's use of this tool to drive more sustainable outcomes for urban development. Permit applicants for either new construction or existing building renovation projects may opt into an accelerated permitting program to reduce cost and schedule risk of planning approvals if they commit to utilizing the Integrated Design Process.



INTEGRATED COST ESTIMATING STANDARDS

Mutually dependent with the Integrated Design Process work, the Economics of Change project team also aims to support the construction industry's acceptance of new, integrative cost estimating standards to enable implementation of green building and infrastructure projects within conventional cost constraints. Although construction estimating standards have evolved over the past few decades, elements perceived as green building features (e.g. solar panels, ground source heat pumps, super insulated glazing units) are still priced as isolated systems and viewed as cost premiums which typically places these items first on the chopping block during value engineering exercises.

Across the globe, design and construction teams evaluating sustainability features and technologies repeatedly face the obstacle of perceived increased capital costs. For example, when evaluating measures to reduce energy use in buildings, engineers can now use advanced modeling simulation programs to identify a bundle of optimal solutions by accounting for the interactions between various systems such as the impact of thermally efficient envelopes and LED lighting on heating ventilation and air condition (HVAC) system requirements. However, building estimators do not use the same level of rigor when calculating the incremental cost of such solutions. Most often there is no recognition of cost reductions between interrelated systems to demonstrate “net cost impacts” to a developer or owner. Current methods of linear design and cost estimation make it harder to follow an integrated approach that could change the notion of green building features always causing increased capital costs.

A 2009 study lead by Prasad Vaidya of The Weidt Group proposed an “alternative, integrated methodology of cost estimation to arrive at a lower perceived incremental cost for improved energy performance.” Their study outlines an integrated cost methodology to move design teams from a simple awareness of the value of energy efficiency measures to enable the team to make better, more informed decisions through improvements to estimating approaches. Vaidya and his research team identified several policies to help shift the industry toward the practice of integrated cost estimation⁵⁵:

- Similar to the requirements for lifecycle costing by some government organizations and public agencies, integrated costing could also be required to assure that capital cost savings are accounted for;
- Public agencies can lead the market by changing the design fee structures to recognize greater importance of early design consideration of cost integration.
- Design fees should be decoupled from capital cost expenditure for major equipment to remove disincentive for “downsizing” systems;

⁵⁵ Prasad Vaidya, Lara Greden, David Eijadi, Tom McDougall, Ray Cole. “Integrated cost-estimation methodology to support high-performance building design,” *Energy Efficiency*, February 2009, Volume 2, Issue 1, pp 69-85.



- Utility rebates and tax deduction programs can also encourage integrated design of building systems by providing high incentives to the designers for overall building energy performance. These design incentives should be decoupled from reported incremental costs;
- Provide funding support to develop publicly available cost databases and costing functions for system or assembly cost estimation; and
- Develop best practice case studies that show how design teams save owners' money through integrated designs.

For the success of the *Economics of Change*, it is important that the current approaches to pricing our buildings and infrastructure move from a “parts and components” model to a “structure as a whole system” model to demonstrate the interconnected nature and synergies between various strategies. For the next phase of research, the project team will be engaging with ASTM International and the Construction Specifications Institute (CSI) to explore potential partnering opportunities to embed Integrated Cost Estimating protocols within ASTM’s Uniformat II and CSI’s MasterFormat, the predominant standards currently utilized by the construction industry to classify building systems and components.

ENERGY, WATER, ECOSYSTEM SERVICES, PUBLIC HEALTH, MATERIALS, AND WHOLE BUILDINGS AND INFRASTRUCTURE

As part of the policy research for this report, the project team reviewed a wide variety of influential global, national, state, and municipal policy documents dealing with the built environment at building, infrastructure, district, neighborhood, and city scales as well as with cross-sector initiatives in sustainable reporting and accounting standards. This research is summarized in Appendix 1.

The following table includes selected policy recommendations from these sources in the areas of energy, water, ecosystem services, public health, materials, and whole buildings with the Appendix 1 source and reference number in parentheses at the end of each recommendation. Similarly, we use (EoC) to indicate a recommendation from the *Economics of Change* project itself. The intent is to illustrate a range of policy approaches that dovetail well with project goals of unlocking value to support investment in a restorative built environment.



POLICY RECOMMENDATIONS

ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
<p>Create Markets for “Negawatts” and enact Energy Efficiency Purchase Power Agreements (EEPPA). Basic premise is that everyone can “sell” energy to the grid. (EoC)</p>	<p>Institute true-cost tariffs for water resources (UBS-20)</p>	<p>Request improvements in Army Corps of Engineers and other federal agency cost/benefit analysis to include ecosystem services (Earth Economics-3)</p>		<p>Standard of terminology (i.e. translation for general consumers) and mandatory disclosure of toxins known to cause harm to humans or the environment for all building products. (EoC)</p>	<p>Confirm role of environmental performance in building acquisition / ownership (Marsh & McLennan-9)</p>
<p>National standards for on-bill, PACE and fuel-neutral meter-based financing through utilities (EoC)</p>	<p>Incentivize holistic water management practices to address and reporting mechanisms that convey impacts on ocean acidification levels (Sukhdev-17)</p>	<p>Support the establishment of a limit to nitrogen and phosphorous usage to reduce eutrophication and acidification within various ecosystems (Sukhdev-17)</p>	<p>Capture data on worker productivity in relation to work environment (Miller/ Pogue-10)</p>	<p>Mandate product Lifecycle Assessments and disclose in marketing materials so full environmental / social impact of product is clear and known at point of specification and/or sale. Potential Partners could be: Healthy Product Declaration; Pharos Project; Delos Project; Declare project; PE e-Tool (EoC)</p>	<p>Capture data on willingness to pay more for healthy working environment (Miller/ Pogue-10)</p>



ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
Smart Grid Requirements / Minimum Metering Standards (Amount and Quality) (EoC)	Incentivize water efficiency practices to address and reporting mechanisms that convey impacts on freshwater shortages (Sukhdev-17)	Integrate biodiversity values by 2020 into national accounting, local development, poverty reduction strategies, planning processes and reporting mechanisms (Sukhdev-17)	Compile research on the social benefits of green infrastructure so that these types of values will be included in the overall monetary valuation process (CNT-2)		Incentivize Corporate Social Responsibility and Responsible Property Investment in green buildings so that financial performance is improved beyond neutrality for developers and investors (Pivo/ Fisher-12)
National Energy Disclosure Act to replicate energy transparency initiatives in Austin, SF, Seattle, and NYC to include all of U.S. building stock. (EoC)	Encourage sustainability within water-related investment (UBS-20)	Manage land use conversion through greater productivity per acre that does not result in increased negative externalities, such as run-off (Sukhdev-17)	Advocate for transparent disclosure and product labeling on aerosols, particulates, chemical pollution and toxic waste storage in regards to human health impacts (Sukhdev-17)		Invest in future-proof infrastructure that prioritizes energy efficiency rather than building 20th century infrastructure (Beyond Coal Washington-1)
Scale up benefits of a proposed green infrastructure program to understand the municipal / regional impact such practices can have on community's quality of life (CNT-2)					
<p>Apply new accounting principles to Utility and Materials Industry to account for, manage and eliminate externalities.</p> <p>Potential Linkage to Living Building Challenge Petals (Site, Water, Energy, Health, Materials, Equity, Beauty) (EoC)</p>					



ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
<p>Price appropriately the external costs of energy production and use to incentivize firms and consumers, now faced with the full cost of their energy use, to make more-informed and socially efficient decisions about energy consumption (Greenstone/Looney-5)</p>	<p>Mandate resource transparency through required water us disclosure legislation state-wide. (EoC)</p>	<p>Establish watershed investment districts to focus investment on restoring ecosystems; fund through avoided costs from relevant agencies. (EoC)</p>	<p>Capture market value of walkability as a positive externality and integrate associated public benefits (Pivo/Fisher-13)</p>		<p>Utilize lessons from community assistance pilot to establish a long-term program providing technical assistance, financing and other tools to help achieve building retrofits (Seattle-4)</p>
<p>Support private and public sector implementation of Integrated Reporting to encourage integrated thinking, transparency of impact and inclusion of the whole spectrum of factors that impact an organization’s success and, therefore, its long-term investment returns (IIRC-7)</p>					
<p>Develop a “natural capital-smart” approach through analysis of the distribution of natural capital risk across the economy, identification of hot spots of low natural capital productivity and development of strategic, operational, regulatory and financial decision-making that internalize these natural capital costs, so as to aid businesses, consumers, investors and governments in a future capital constrained world (Trucost-13)</p>					
<p>Advocate for all major corporate externalities—both positive and negative—to be measured and reported as disclosures in the annual financial statements of companies (Sukhdev-17)</p>					



ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
<p>Encourage energy efficiency within existing building stock through clarity of current energy use and incentives to increase efficiency before sale, at point of sale, or after sale (Beyond Coal Washington-1)</p>	<p>Dept. of health/ ecology regulatory changes around on-site wastewater treatment for eco-machines or membrane bioreactors and potable water uses from rain capture (tied to EPA rulings). (EoC)</p>		<p>Encourage triple bottom line accounting through development of a process to assess the social bottom line (PSU-6)</p>		<p>Structure tiered development review fees with legislative support to incentive deep green buildings, including building performance as a key criterion, whereby permit fees are reduced and fee-bates encouraged or higher fees are required for buildings meeting only the minimum (Seattle-4)</p>
<p>Advocate that “least cost” investments take account of true costs and externalities (Beyond Coal Washington-1)</p>	<p>Policy for no potable water use in toilet flushing irrigation, HVAC make-up water or washing machines. Reclaimed water for all these uses should be required. (EoC)</p>			<p>EPA regulation should increase stringency on toxicity of materials utilized in our buildings, products and infrastructure to mitigate adverse and systemic human health impacts (e.g. sick building syndrome, carcinogens, VOCs, endocrine disruptors etc...) (EoC)</p>	



ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
State and national carbon taxes using a fee and dividend approach (EoC)	State-level “fee-bate” program to incentivize shift to ecological storm water treatment to prevent polluted run-off from degrading water bodies. (EoC)		Adoption of Health & Wellness Building Standard for buildings and infrastructure in the U.S. (EoC)		
Encourage greater efficiency in existing buildings through minimum energy performance standards (Marsh & McLennan Companies-9)					Develop district energy policies and incentive programs to identify, capture and utilize waste heat generated from industrial, sewage and other processes, including establishment of industrial waste heat recovery (Seattle-4)
Establish a home energy rating system at point of sale and share comparative energy use on bills for single-family homes (Seattle-4)	Revise zoning and adopt inter-department/inter-agency coordination to maximize synergistic land uses for district-scale water systems (Seattle-4)				Revise zoning and adopt inter-department/inter-agency coordination to maximize synergistic land uses for district-scale energy systems (Seattle-4)



ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
<p>Advocate for decoupling so that utilities are encouraged to value energy efficient and distributed generation (Beyond Coal Washington-1)</p>	<p>Partner with EPA to rethink a resilient 21st century distributed potable water supply program for U.S. (i.e. precinct or building scale rain capture / treatment and potable use) without use of chlorine to promote better human health. (EoC)</p>				<p>Partner with EPA to rethink a resilient 21st century distributed potable water supply program for U.S. (i.e. precinct or building scale rain capture / treatment and potable use) without use of chlorine to promote better human health. (EoC)</p>
<p>Encourage reduced peak loads by commercial and industrial users to reduce overall demand (Beyond Coal Washington-1)</p>	<p>Allow water utilities to count the full value of watershed in accounting methods to unlock a new era of investment in ecological infrastructure to manage storm water flows, prevent flooding, increase quality of storm water runoff into our water bodies and re-introduce ecosystem services into our urban cores (e.g. such as green roofs, vegetated walls, constructed wetlands, street trees, community gardens, planted swales, tree canopies over streets, eco-boulevards, living machines). Synergistic benefit of biophilic urbanism for enhanced health and wellbeing of urban residents/ workers. (EoC)</p>				
<p>Establish a voluntary retro-commissioning program to provide large multifamily and commercial building managers with the information and technical assistance to optimize building performance (Seattle-4)</p>	<p>Policies should support a more distributed platform and increased reliance on ecological vs. technological treatment of wastewater. (EoC)</p>				<p>Policies should support a more distributed platform and increased reliance on ecological vs. technological treatment of wastewater. (EoC)</p>



ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
<p>Pilot utility incentive structures, such as meter-based financing, based on the actual energy savings of an energy upgrade and investigate what incentive level and structure promotes deep energy retrofits and move toward establishing the system(s) (Seattle-4)</p>	<p>Policy to support distributed water treatment systems (i.e. Sewer hook-up / capacity fee based on actual flow into main vs. estimated full flow since payment of full capacity charge undermines economics of on-site systems.) (EoC)</p>				<p>Policy to support distributed water treatment systems (i.e. Sewer hook-up / capacity fee based on actual flow into main vs. estimated full flow since payment of full capacity charge undermines economics of on-site systems.) (EoC)</p>
<p>Establish a property tax exemption program for existing rental housing owners who undertake significant energy retrofits (Seattle-4)</p>					<p>National District Energy Policy: create clear and simple pathway for states to adopt regulation to decrease barriers and increase growth of embedded network generators. Leverage work of Interstate Renewable Energy Council (IREC) to support consistency of standards nationally. (EoC)</p>



ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
Continually increase energy efficiency standards/ codes, and require an energy monitoring interface to educate occupants and promote changes in tenant behavior (Seattle-4)	Develop program to mitigate lender risk associated with projects dependent on district-scale water systems (Seattle-4)				Develop program to mitigate lender risk associated with projects dependent on district-scale water and energy systems (Seattle-4)
Move from a prescriptive or modeling-based code to an outcome-based code and establish compliance tracking mechanisms (Seattle-4)					Consistent Electrical Vehicle infrastructure strategy with proper planning for off-peak battery storage (EoC)
					Allow the public right-of-way to be used for ground source heat wells, where appropriate, to provide heating and cooling to nearby buildings (Seattle-4)



ENERGY	WATER	ECOSYSTEM SERVICES	PUBLIC HEALTH	MATERIALS	WHOLE BUILDINGS & INFRASTRUCTURE
<p>Require mandatory improvements, including multifamily and commercial building owners to improve energy performance of buildings at established intervals (e.g. once per decade), and home energy upgrades for single family homes at point of sale (Seattle-4)</p>					<p>Continue the trend of up-zoning around urban centers, and consider options for expanding attached housing in a contextually sensitive way in single-family zones as well as co-location of diverse uses to encourage efficiencies at scale (Seattle-4)</p>
<p>Include provisions within the revised incentive program to reward highly energy efficient buildings and support an outreach program with developers to raise their awareness of the benefits of incentive zoning (Seattle-4)</p>					<p>Incentivize deep energy efficiency in construction through density (via floor-area ratio) bonuses, balanced against other objectives, such as affordable housing (Seattle-4)</p>



CONCLUSIONS AND NEXT STEPS

The continued ascension of green buildings movement has the potential to spur the change real estate industry's transition to a truly sustainable process of creating, maintaining and regenerating the built environment. Providing a new integrated value methodology to the building industry can be a "trim tab"⁵⁶ solution to accelerate and scale the building industry to an ecologically restorative, socially just and economically vibrant paradigm. This report outlines the concept for the creation of a valuation tool for the industry, provides numerous recommendations for policy interventions, and spotlights process improvements like the widespread and deep adoption of integrative design to not only the built environment, but also the policies that influence the industry. However, this report is the leading edge of a body of work to complete the *Economics of Change* project and accelerate the transformative change needed.

Critical next steps to continue the *Economics of Change* project's policy initiatives include:

- Complete development of the Integrated Valuation Tool™ to provide data, methodologies, and support for policy interventions.
- Convene, collaborate and advise local, state, and national policy initiatives and promote integrative policy development.
- Support and encourage the widespread adoption of the integrative design process and integrative cost estimating.
- Promote broader valuation concepts throughout the appraisal, lending, investor, and developer communities.
- Connect to related efforts to map and monetize externalities in other sectors and other geographies (e.g. Europe, Australia, Asia.)
- Create communication tools and strategies to build awareness of the Economics of Change to a broad audience with the generous support of funding from the Bullitt Foundation.
- Continue strategic industry engagement to build and convene a strong Advisory Council for the global effort tied to the Economics of Change.

⁵⁶ R. Buckminster Fuller's grave has etched upon it "Call me trim tab." In his words, "Something hit me very hard once, thinking about what one little man could do. Think of the Queen Mary — the whole ship goes by and then comes the rudder. And there's a tiny thing at the edge of the rudder called a trim tab. It's a miniature rudder. Just moving the little trim tab builds a low pressure that pulls the rudder around. Takes almost no effort at all. So I said that the little individual can be a trim tab. Society thinks it's going right by you, that it's left you altogether. But if you're doing dynamic things mentally, the fact is that you can just put your foot out like that and the whole big ship of state is going to go. So I said, call me Trim tab." - R. Buckminster Fuller quoted in *The Examiner*.



APPENDICES

APPENDIX 1. REVIEW OF GREEN BUILDING POLICY LITERATURE

As part of the policy research for this report, the project team reviewed a wide variety of influential global, national, state, and municipal policy documents dealing with the built environment at building, infrastructure, district, neighborhood, and city scales as well as with cross-sector initiatives in sustainable reporting and accounting standards. Executive summaries are included below in the form of direct quotes from the source documents.

1. Beyond Coal Washington, *Beyond Coal: Washington State's Next Biggest Step to Clean Electricity, Climate Protection and 21st Century Jobs*, Seattle, Washington.

- In the Northwest, Oregon's only coal plant (Portland General Electric's Boardman plant) and Washington's only coal plant (TransAlta's Centralia plant) are slated to retire. Only one major coal plant remains in the Northwest that serves the Washington utilities of Puget Sound Energy, Avista Utilities and Pacific Power and Light. These three utilities own half of one of the largest plants in America, the Colstrip Generation Facility in Colstrip, Montana. [Retiring] Colstrip alone [would remove] 15-17 million tons of GHGs every year, equivalent to 3 million cars every year.
- Washington State uses 1470 average megawatts (aMW) of coal-fired electricity ... enough to power one and a half Seattles.
- Coal is about 15% of the total electricity in Washington but accounts for 81 percent of the state's greenhouse (GHG) emissions.
- Any policies that seek to reduce climate pollution from the electricity sector in Washington State will need to focus on these private utilities, and more specifically, their Colstrip coal plant.
- "We believe that the State of Washington can be and will be an example to the world of how a clean energy, climate-change reduction strategy is a winning proposition economically...This is something that is perfectly built for the skill set for the State of Washington...It demands public policy that is designed to send a signal to the market." Comments by Gov. Jay Inslee, February 19, 2013, on the introduction of his bill S.B. 5802, a bill to support development of clean energy and climate solutions to meet the State's climate goals[.]
- In Washington State, the three private utilities are overseen by the Washington Utilities and Transportation Commission (UTC). The UTC must approve customer financing of any acquisitions of new power or new capital investments in existing power plants such as major environmental compliance requirements for Colstrip. The UTC has asked Puget Sound Energy for a "broad examination" of Colstrip's costs to ensure customers do not end up paying for hundreds of millions of dollars for plant upgrades, maintenance and environmental compliance costs when cleaner alternatives may be less expensive, and certainly more sustainable. The UTC has two primary processes for accounting for power resources: rate cases and long-range plans. Rate cases are the review and approval of expenses and investments that have already been made. Washington utilities never expect to make major capital investments - whether buying new plants



or cleaning up old ones – unless they are confident the UTC will approve the investment and make customers pay for the capital expense. The long-range plan – known as the Integrated Resource Plan (IRP) – is the utility blueprint for expected supply and demand over 10 to 20 years. The UTC provides review and comment of this IRP. The UTC began addressing Colstrip’s costs in Puget Sound Energy’s 2011 IRP, its 2011-2012 general rate case and its 2013 IRP. Findings in the PSE assessment and subsequent UTC review will affect how coal and Colstrip is assessed for Avista and Pacific Power as well. How this assessment is conducted can have profound implications for Washington’s clean energy future.

- Washington State has made great strides in delivering on the popular support for energy efficiency and renewable energy. Much has already been done to move the state toward cleaner energy, including...I-937, Washington’s Energy Independence Act, [requiring] large utilities to obtain 15% of their electricity from new renewable resources...[and to] undertake all cost-effective energy conservation.
- Since we know that many utilities expect to replace coal power with natural gas power, the objective here is to make clear that is not necessary. We have the tools, the know-how, the experience, the skill set within Washington State to replace all of our coal-fired electricity with energy efficiency, renewable energy and a more sophisticated electricity grid.

2. Center for Neighborhood Technology, *The Value of Green Infrastructure: A Guide to Recognizing Its Economic, Environmental and Social Benefits*, Chicago, IL, 2010.

- Green infrastructure (GI) is a network of decentralized stormwater management practices, such as green roofs, trees, rain gardens and permeable pavement, that can capture and infiltrate rain where it falls, thus reducing stormwater runoff and improving the health of surrounding waterways.
- In addition to reducing polluted stormwater runoff, GI practices can also positively impact energy consumption, air quality, carbon reduction and sequestration, property prices, recreation and other elements of community health and vitality that have monetary or other social value. ...While a number of cities have begun to explore GI within their own municipal infrastructure programs, no general method for estimating or documenting such benefits has yet emerged.
- This guide outlines a framework for measuring and valuing green infrastructure’s multiple ecological, economic and social benefits.
- It is first necessary to define a resource unit for the given benefit. For example, when evaluating energy benefits, the resource units are kilowatt hours (kWh) and British thermal units (Btu). ...In [the second] step, values for each benefit are determined based on the resource units from the previous step. The method for translating resource units into a dollar figure differs for every benefit category.
- Due to the nature and scope of this report, every local project will have its own set of case-specific variables and uncertainties that must be evaluated.



- [C]onsideration of the counterfactual comparison is necessary. In other words, clearly defining what is being compared is critical.
- [T]he need for local data when working through a framework for valuing a green infrastructure project or program remains crucial.
- An equally important consideration within spatial scaling is the concept of an ecological threshold, which can be described as “the point at which there is an abrupt change in an ecosystem ... or where small changes in an environmental driver produce large responses in the ecosystem” (Groffman et al 2006).
- When evaluating an investment, economists use a process known as discounting, or present-value determination, to calculate the present-dollar equivalent of an investment’s future benefits. In other words, discounting “translate[s] the values of future impacts into equivalent values in today’s monetary units” (Goulder and Stavins 2002).
- When proposing a large or long-term green infrastructure project, an in-depth discounting analysis, tailored to the specific case at hand, should be performed.
- Although recommendations or sample prices for water treatment, electricity, criteria air pollutants and carbon can be found in [this report’s] “Water,” “Energy,” “Air” and “Climate” sections, respectively, it is important to tailor these values to specific local data numbers whenever possible. The prices used in these calculations will have a significant impact on the magnitude of monetary value realized.
- Summing up the benefits from multiple green infrastructure practices can be extremely complex, as many of the benefits are interconnected and correlated. ... It is important to keep in mind which aspects of each benefit are being captured in each stage of the valuation [to avoid double counting].
- Many municipalities have begun to recognize the additional benefits green infrastructure and effectively incorporate these practices. The following case studies illustrate the process these municipalities have implemented and what some of the findings have been.
- For more examples of communities implementing green infrastructure practices, please check-out The Conservation Fund’s Green Infrastructure Leadership Program, which has assembled an online database of green infrastructure projects being planned and implemented across the country. <http://www.greeninfrastructure.net/content/projects>

3. Earth Economics, Changing Cost/Benefit Analysis excerpted from *Valuing the Puget Sound Basin: Revealing Our Best Investments*, Tacoma, WA, 2010.

- All federal and state agencies, cities, counties and many private firms utilize cost/benefit analysis to make investment decisions.



- Cost/benefit analysis is the primary factor in flood protection investment decisions at the Army Corps of Engineers. They require that the cost/benefit ratio be above one for any flood control investment to even be considered for funding.
- If cost/benefit analysis is flawed, investments will be flawed.
- For about a decade, the United Kingdom has required that ecosystem services be valued and factored into all flood protection cost/benefit analysis.
- In the US, the federal rules for cost/benefit analysis are currently under consideration for significant changes. Proposed changes include the valuation of ecosystem services.
- The State of Washington and Puget Sound Basin could lead the way by requesting improvements in Army Corps of Engineers and other federal agency cost/benefit analysis to include ecosystem services. The State should quickly include ecosystem services and pioneer changes in state cost/benefit analysis to lead the nation and hasten rule improvements.

4. Emerald Cities Seattle, *An Emerald City From Megawatts to Negawatts: How Seattle City Light Can Lead The Way, Seattle, WA, 2011.*

- Just over one hundred years ago, Seattle City Light was established by civic and governmental leaders as an electric utility dedicated to the public good.
- Due to the foresight of J.D. Ross and other innovators who followed, Seattle City Light achieved in 2005 what no major US electric utility has been able to accomplish when it became a net-neutral carbon emissions utility.
- As Seattle City Light embarks on its current strategic planning process...City Light now has the opportunity to go beyond its current achievements by creating a “negawatt” market that puts the generation of energy savings on par with the generation of electricity from traditional sources.
- We must start decreasing the amount of energy we consume, and start treating the kilowatts we take out of use – or negawatts – as a clean and sustainable energy SOURCE. There are immense opportunities to invest in measures that can reliably produce energy savings that are permanent, measurable, additional, and dispatchable – similar to traditional supply side generation technology. Saved energy can be generated as resource that is on par with new generation, creating a new negawatt market.
- A negawatt market would treat energy savings more like a resource by recognizing the full value of avoided generation and transmission costs. Negawatts can then gain true equality with megawatts, and act as a resource that can be fully integrated into resource planning.
- By increasing base load savings and decreasing the quantity of clean energy consumed by Seattle City Light customers, the amount of high-margin hydropower available to sell to power-hungry states like California will increase. The revenue realized by these sales can be used to mitigate contentious rate increases and provide for further negawatt producing projects.



- By introducing efficiencies into our production, distribution, and usage of electricity, we can use our green power to displace fossil fuels in neighboring communities and states. We can move from a community which pledges to “do no harm” to one which proactively seeks to restore the natural environment in our region.

5. Greenstone, Michael and Looney, Adam, *Paying Too Much for Energy? The True Costs of Our Energy Choices, in Dædalus, the Journal of the American Academy of Arts & Sciences, vol.2, Spring 2012, pgs 10-30.*

- The true cost of energy includes the price we pay at the gas pump or what shows up on the electric bill—known as the “private costs”—and also the less obvious impact of energy use on health, the environment, and national security. Economists refer to these additional damages as negative externalities, or “external costs.” A more holistic accounting of the total costs of energy consumption that includes both the private and external costs is known as the social cost of energy use.
- These costs—ranging from increases in lung disease and infant mortality to problems associated with climate change—have been quantified and can be expressed in dollar terms.
- For example, we estimate that it costs about 3.2¢ for an existing coal plant to produce a kilowatt hour (kWh) of electricity. But this inexpensive sticker price belies the more significant damages (estimated at roughly 5.6¢ per kWh) of coal-generated electricity to our well-being: shorter lives, higher health care bills, and a changing climate that poses risks to our way of life. The true social cost is almost three times the amount that appears on our utility bills. Current energy policy tilts the balance in favor of energy sources that appear cheap only because their costs to health, the climate, and national security are obscured or indirect. As a result, society pays unnecessarily high costs for energy.
- A better approach to energy policy should encourage fairer competition between energy sources by placing them on equal footing.
- A fundamental change in our energy policy will not be easy and will come with costs, with some industries and regions in the U.S. economy being more affected than others. This is because U.S. households and businesses have made decisions based on the expectation of access to energy sources with relatively low private costs.
- [W]e offer the following principles for reforming U.S. energy policies in order to increase Americans’ well-being: 1) Appropriately price the external costs of energy production and use. ... If firms and consumers faced the full cost of their energy use, they would have a greater incentive to make more-informed and socially efficient decisions about energy consumption. 2) Fund basic research development and demonstration.
- Unfortunately, there is little incentive for the private sector to undertake either basic research or technology demonstration projects that are good for society because they may not offer the promise of a profitable private return.



- This creates a critical role for government research to provide funding and support for the types of basic research that could help facilitate the creation of low-cost, clean energy sources. 3) Make regulations more efficient.
- By requiring cost-benefit analysis to evaluate the potential impact of regulations and by assessing the reliability of empirical studies that are used to complete that analysis, we can greatly enhance the effectiveness and reputation of our environmental regulatory system. Furthermore, to ensure their ongoing value, an independent, automatic retrospective review of economically significant regulations is critical. If these reviews find that the costs exceed the benefits, then the regulations should be amended or removed. Finally, genuine reform may involve rethinking and potentially eliminating regulations that become superfluous or counterproductive after energy sources are priced. 4) Address climate change on a global scale.
- This effort can begin today with a number of measures such as building the capability to monitor total net emissions at the country level (this could be a building block for a trading system) through a combination of satellite- and land-based measurement systems. This would provide evidence of carbon emissions by countries and eliminate issues surrounding the accuracy of reporting, which has been a stumbling block in international negotiations.

6. Hammer, Janet, Portland State University, *Development that Adds Up: Accounting for the Social Bottom Line of Triple Bottom Line Investment - A Review of Current Practice and Application to the Portland Metropolitan Region*, Portland, OR, 2009.

- The Social Equity and Opportunity Forum of Portland State University's College of Urban and Public Affairs is leading an effort to advance thinking and practice regarding the social bottom line of development investment in the Portland metropolitan region.
- Examples of SBL assessment can be found across the globe, by such varied names as impact assessment, social return on investment, social responsibility reporting, or social accounting. ...Thus, a plethora of evaluation frameworks or tools have emerged.
- SBL evaluation is distinct from, but related to, quality of life and sustainability indicator initiatives. Indicator initiatives track how a community, state, region, or country is performing with respect to a set of goals (e.g., health outcomes, transit time, educational achievement, income, air quality, access to clean water, housing affordability), while SBL initiatives evaluate impacts of a specific project or policy. Ideally, where indicator initiatives are in place, SBL evaluations consider whether and how an investment's impacts contribute to or inhibit achievement of quality of life or sustainability goals.
- At its best, development investment with a good social bottom line is development with rather than to or for a community.
- Development investments with a good social bottom line contribute to the creation of "complete communities" - communities where it's easy to access life's daily goods and services.



- Development investments with a good social bottom line enhance people’s ability to reach their potential. These projects invest in people as well as physical spaces – soft infrastructure as well as hard infrastructure.
- Developments with a good social bottom line have a positive impact on the fiscal health of the community.
- [Developments with a good social bottom line] ask how impacts are distributed, and whether certain groups bear disproportionate burdens or benefits, including future generations.
- Developments with a good social bottom line integrate with economic and environmental bottom lines. They consider full costs and life cycle costs, rather than off-loading costs to others.
- Participants in our sector conversations, consistent with the majority of the literature and examples reviewed, suggest that the social bottom line be viewed figuratively rather than literally. The impacts of development investment cannot be reduced to a singular number, monetized or otherwise.
- Our review of the literature and community feedback indicate that the most valuable and appropriate assessment standards will be guidelines for a process to measure the social bottom line in a way that responds to context and provides meaningful information about whether and how a project has improved or degraded social conditions.
- Our research indicates that it is more important to have standard guidelines for evaluating the social bottom line than standard metrics for evaluating the social bottom line. This includes having a process that is adaptable across a range of types and scales of development investment – from infrastructure to mixed-used development, from small loans to multi-million dollar initiatives.
- If public, private, and non-profit investors want to account for the social bottom line of their development investments, they likely will need to require assessment as a condition of funding or approval.
- Finally, to ensure that assessment is not merely a “toothless tiger,” accountability mechanisms must be in place, with reasonable consequences associated with not reporting, reporting poorly, or demonstrating a poor social bottom line.

7. International Integrated Reporting Committee, *Towards Integrated Reporting: Communicating Value in the 21st Century*, 2011.

- The IIRC aims to forge a global consensus on the direction in which reporting needs to evolve, creating a framework for reporting that is better able to accommodate complexity, and, in so doing, brings together the different strands of reporting into a coherent, integrated whole.
- The IIRC is conducting a two-year Pilot Programme, commencing in October 2011, to test and further develop the International Integrated Reporting Framework [IIRC].
- It is anticipated that an Exposure Draft of an International Integrated Reporting Framework will be published for comment in 2012.



- Since the current business reporting model was designed, there have been major changes in the way business is conducted, how business creates value and the context in which business operates.
- Against this background, the type of information that is needed to assess the past and current performance of organizations and their future resilience is much wider than is provided for by the existing business reporting model. While there has been an increase in the information provided, key disclosure gaps remain.
- Integrated Reporting brings together material information about an organization's strategy, governance, performance and prospects in a way that reflects the commercial, social and environmental context within which it operates. It provides a clear and concise representation of how an organization demonstrates stewardship and how it creates and sustains value.
- Research has shown that reporting influences behaviour. Integrated Reporting results in a broader explanation of performance than traditional reporting. It makes visible an organization's use of and dependence on different resources and relationships or "capitals" (financial, manufactured, human, intellectual, natural and social), and the organization's access to and impact on them.
- Because traditional reporting occurs in silos, it encourages thinking in silos. Integrated Reporting, on the other hand, reflects, and supports, integrated thinking-monitoring, managing and communicating the full complexity of the value creation process and how this contributes to success over time. Integrated Reporting demonstrates the extent to which integrated thinking is occurring within the organization.
- This broader perspective requires consideration of resource usage and risks and opportunities along the organization's full value chain.
- An organization determines its business model through choices that typically recognize that value is not created by or within the organization alone, but is...influenced by external factors...co-created through relationships with others...and dependent on the availability, affordability, quality and management of various resources, or "capitals" (financial, manufactured, human, intellectual, natural and social). Integrated Reporting therefore aims to provide insights about...significant external factors that affect an organization...the resources and relationships used and affected by the organization, and...how the organization's business model interacts with external factors and resources and relationships to create and sustain value over time.
- Importantly, an Integrated Report clearly presents the linkage between financial performance and the organization's use of, and impact on, the significant resources and relationships upon which it depends.
- Integrated Reporting provides a platform to help enhance sector-specific reporting models and to bring together information from different forms of reporting. This assists improved sectoral and geographical analysis and comparison of issues[.]



- Many of the current compensation and incentive structures along the investment supply chain drive a focus on the short term. A wide range of steps are being taken [stet] by regulatory and non-regulatory actors to rebalance this focus. Integrated Reporting can support these efforts by taking into account the whole spectrum of factors that impact an organization’s success and, therefore, its long-term investment returns.
- Integrated Reporting, by providing decision-relevant information, can support effective action by policy-makers and regulators as users of that information.
- Because of the broader perspective required by Integrated Reporting, both in terms of the resources and relationships that it takes into account and the longer timeframe over which value creation is considered, it leaves organizations better placed to act, and be more accountable, as stewards of the community’s common resources, in particular human, natural and social capital.

8. Joines, Vann, *Show Me the Green: Revealing Value in Green Buildings, 2012.*

- When considering an income-based ten year discount cash flow valuation analysis for commercial real estate investments, there are four main areas that affect value: Income, Vacancy, Expenses and Risk. Within the commercial office sector, multiple studies have shown that certified green buildings yield increased annual income, increased occupancy, reduced expenses, and decreased risk exposure.
- While specific data from these studies is not directly applicable across markets and building uses, economists have shown that certified green U.S. office buildings consistently outperform the market. Despite these findings, few in the appraisal and underwriting industry have changed their practices to reflect this added value.
- [B]ecause the building’s owner pays the upfront costs to reach green certification, while the building’s tenant enjoys the reduced utility bills, owners have traditionally had little reason to justify the increased capital expenditure associated with green certification. This inability for a building owner to realize the return on investment associated with green certification through a traditional lease structure is commonly referred to as the “split incentive problem.”
- Therefore, when viewed as a whole, these three studies provide reasonable evidence that there is both a small annual rent premium, seen in both the base and effective rents, and a large reversion premium for certified green office buildings.
- This observation seems to indicate that investors in real estate place significant value on the perceived reduction in risk associated with certified green buildings.
- In an effort to formally place value on these previously unconsidered social and environmental factors, Earth Economics has put together a team of industry professionals and published the first phase of this investigation titled, “The Economics of Change.” What Twill and his colleagues at Earth Economics aim to accomplish with this effort is to lead the real estate industry to see the increased value in green buildings, by placing value metrics for owners, appraisers and



policy-makers on these previously unconsidered social and environmental factors that arise from these restorative building practices.

- For most real estate owners, their lending and investment owners must be thoroughly convinced of the increased value of a certified green investment before those lenders and investors are willing to put their money at risk. Therefore in order to increase the scale of certified green development, lenders and investors must be willing to adapt and standardize their underwriting practices to show the increased valuation associated with certified green buildings.
- In 2011 the Appraisal Foundation announced their partnership with the US Department of Energy (DOE) to begin investigating best practices for showing the increased cash flow, decreased vacancy and increased valuation at equity reversion for certified green buildings.
- James Finlay put it beautifully when [he] said that, “the theory that the problem lies in the appraisal is most real, but the first crisis of confidence lies in the property owners themselves.”
- In addition to responding to market demand, owners also need reliable building performance data that they can plug into their pro formas when making investment decisions.

9. Marsh & McLennan Companies, *Property Sustainability: Survey of Property Owners, Tenants, Investors, Advisers and Risk Managers on the Issues of Property Sustainability*, London, UK, 2012.

- Since two thirds of the building stock that will exist in our cities in 2050 is already standing today, the challenge of making the entire building stock more sustainable relies heavily on the ability to adapt the existing buildings.
- Marsh, in collaboration with The British Property Federation (BPF) and BASE, has undertaken a survey of [165] property and risk management professionals in order to gain an understanding of the scale of the challenge in achieving truly sustainable buildings and cities.
- Thirty-six per cent were property owners and investors, 14 per cent were tenants of property, 15 per cent were risk managers, 15 per cent were property advisers with the remaining 20 per cent having some other relationship with property.
- Eighty-seven per cent of respondents confirmed that they include some elements of environmental performance criteria in their consideration of properties for acquisition.
- It is very surprising to see energy performance certification ranking as highly as a number of the more conventional concerns such as transport, maintenance and flood risk. This may be a response to the potential introduction of minimum building energy performance standards [by 2018].
- Over 86 per cent of respondents confirmed that they include elements of environmental performance management in their property ownership strategy.
- The response to this question confirms that the property industry is aware that the regulatory curve of climate change interventions is only going to increase over time, with fiduciary risks for those who do not keep pace.



- Improving the overall resiliency of the building stock, with enhanced loss prevention procedures, will benefit both the insured and the insurers. The continued development and enhanced adoption of green buildings and resilient repair clauses will provide good risk management and promote property sustainability.

10. Miller, Norm and Pogue, Dave, *Green Buildings and Productivity*, Unpublished Draft, 2009.

- The review of the literature reveals that there is no universally accepted measure of office productivity but recent researchers have adopted the self-assessment approach.
- In May of 2009 a team from CBRE and the University of San Diego surveyed 154 buildings containing over 2,000 tenants that were deemed green by virtue of either the Energy Star label or LEED certification (at any level). Some 534 tenant responses were collected from buildings spread across the country. [Findings included] 12% strongly agree that employees are more productive, 42.5% agree that employees are more productive, and 45% suggest no change [and] we see that 45% agree that workers are taking fewer sick days since moving, 45% find it is the same as before, while 10% of those find more sick days.
- [We conclude that] Healthier space need not be new space.
- Healthier buildings reduce sick time and increase productivity. The steps required to provide a healthier building are not that much of a design and engineering challenge. Generally natural light, good ventilation, the absence of organic compounds provides happier, healthier workers. Appropriate temperature ranges or localized controls is also a big plus to workers and past research does support the notion of greater productivity from any or all of these improvements.
- Tenants should be willing to pay more rent for better buildings and even though most tenants won't admit to this (84% or more say "No") we have found evidence in past studies that suggests they do pay premiums and based on the results here these premiums of only 5% to 10% are a bargain.

11. Muller, Nicholas, Mendersohn, Robert and Nordhaus, William, *Environmental Accounting for Pollution in the United States Economy*, *American Economic Review*, vol:101, pgs 1649-1675, 2011.

- National economic accounts are based on the principle that they cover those activities that are included in market activities. External effects are activities that are by definition excluded from market transactions, and they are therefore by definition and in principle excluded from the market accounts.
- [The Satellite Economic and Environmental Accounts attempt] to bring together economic and environmental data in a common framework to measure the contribution of the environment to the economy and the impact of the economy on the environment. There are four different categories of accounts in SEEA, including flow accounts, environmental expenditures, natural resource accounts, and valuation accounts. At present, however, SEEA does not include a full treatment of how to incorporate environmental flows into the national economic accounts.



- There has been little progress, however, in developing a practical environmental accounting system that can be integrated with the national economic accounts.
- We find that the ratio of GED[gross external damages]/VA[value added] is greater than one for seven industries (stone quarrying, solid waste incineration, sewage treatment plants, oil- and coal-fired power plants, marinas, and petroleum-coal product manufacturing). This indicates that the air pollution damages from these industries are greater than their net contribution to output. Several other industries also have high GED/VA ratios. We also present the overall size of GED by industry. Five industries stand out as large air polluters: coal-fired power plants, crop production, truck transportation, livestock production, and highway-street-bridge construction.

12. Pivo, Gary and Fisher, Jeffrey, *Income, Value, and Returns in Socially Responsible Office Properties*, *The Journal of Real Estate Research*, vol:32:3, pgs 243- 270, 2010.

- Investors are increasingly interested in socially responsible investing (SRI)...or “directing investment funds in ways that combine investors’ financial objectives with their commitment to social concerns such as social justice, economic development, peace, or a healthy environment,” (Haigh and Hazelton, 2004).
- The application of SRI to the property sector is referred to as responsible property investing (RPI)...expands the range of parties whose interests decision makers should consider and seeks out investment and development strategies that improve the well-being of both immediate professional clients as well as other groups, such as neighbors, construction workers, maintenance personnel, building users, other species, and future generations.
- [A] recent review of studies on social responsibility and business outcomes found that social responsibility neither harms nor improves returns...conclud[ing] that “companies can do good and do well, even if they don’t do well by doing good.” The findings that in most cases RPI neither harms nor improves total returns, suggest the same conclusion. For developers, however, the opportunities may be better than that, but a more definitive answer to that question must await further investigation.

13. Pivo, Gary and Fisher, Jeffrey, *The Walkability Premium in Commercial Real Estate Investments*, *Real Estate Economics*, vol:10, pgs 1-35, 2011.

- In this article, we examine the impact of walkability on market values and investment returns for office, retail, apartment and industrial properties.
- Based on this review, we concluded that walkability may well be producing benefits that are reflected in higher market values and incomes. We also suspected that a shift may be occurring in the marketplace in favor of more walkable places, which has not been fully anticipated by investors or appraisers. Therefore, we hypothesized that walkable properties have been valued as much or more and produced investment returns as good as or better than other more autooriented real estate.



- To test our hypotheses, we combined real estate performance information from the National Council of Real Estate Investment Fiduciaries (NCREIF) with walkability data from Front Seat. NCREIF is a nonpartisan source of real estate performance information based on property-level data submitted by its data contributing members, which include tax-exempt institutional investors and investment managers. Front Seat is a civic software company that developed Walk Score, an online tool that provides walkability ratings for any address in the United States.
- We tested our hypotheses using data for over 4,200 properties of various types from throughout the United States.
- Walkability was associated with higher value for office, retail and apartment properties. These types of properties with a Walk Score of 80 were worth anywhere from 6% to 54% more than properties with a 20 Walk Score, depending on property type. Consistent with their higher values, we also found higher net operating incomes for the office and retail properties.
- Walkability did not have a statistically significant effect on total returns. We did see, however, lower cap rates for more walkable retail and apartment properties. Apparently, investors were willing to pay more for each dollar of income produced by more walkable retail and apartment properties either because they viewed them as safer investments or because they anticipated superior income growth or slower depreciation.
- Finally, we should note what our findings do not include. First, the value figures do not include a public cost-benefit analysis of walkability that would address externalities to public health, air quality, traffic safety and energy conservation. As such, our results do not address the advisability of promoting walkability as a matter of public policy.
- [I]nvestors and developers may worry that insufficient financial performance could be an obstacle. We find no evidence, however, to support this concern. Rather, it appears that over the past several years walkable properties have performed on par with other property investments and could be superior investments for developers if they can manage to capture some or all of the walkability premium that appears to exist in the U.S. property market.

14. Portland Sustainability Institute, *EcoDistricts Finance Toolkit: Funding EcoDistricts from Predevelopment through Project Implementation*, Portland, OR, 2012.

- This [comprehensive, integrated EcoDistrict implementation] approach was informed by the notion that while each EcoDistrict may have holistic goals, implementation will likely require integrated management of a collection of individually financed projects operating together to meet those goals.
- Success will require collaboration between public and private sectors to share resources and to appropriately allocate risks and benefits. Districts will require multiple forms of public and, likely, philanthropic capital (such as cost-sharing, grants, tax incentives, subsidies, and below-market-rate loans), as much as they will require private forms of capital (tax equity, debt, venture capital, etc.).



- Once initial EcoDistrict conversations and goals are underway, and stakeholders are organized to start making decisions, the community may consider district-wide financing strategies that aggregate funds across multiple property owners to benefit the district as a whole.
- At the most practical level, the district-wide funds support integrated assessments and broad feasibility that determine the projects with the greatest impact as well as areas of overlap with other projects.
- [Integrated District-Scale Financing] Strategies are varied and can include the following: Tax-assessed districts, such as local improvement districts (LIDs) and business improvement districts (BIDs), where additional taxes are levied against owners; Non-taxed-assessed districts, such as parking benefit districts (PBDs), where parking revenue is used to fund public projects; voluntary contributions; and urban renewal area (URA) funds; and Future models, such as climate benefit districts (CBDs) and emerging approaches that address community equity. A business improvement district (BID), also known as an economic improvement district, is a public-private partnership that obtains private-sector funding from assessments on commercial property. The assessments are paid by property owners rather than businesses, to avoid the issue of district revenue lost through tenant turnover.
- Oregon state law provides flexibility so that funding for infrastructure may be possible if clearly stated at the time the BID is voted upon and established, which opens the door for EcoDistrict-scale projects. Because BID assessments are capped at 1 percent of real market property values, BIDs are unlikely to serve as a standalone infrastructure-financing strategy. Assessments cannot be levied on residential properties, but are only applicable for commercial- and industrial-zoned properties. Urban renewal area or local improvement district designations have no bearing on whether a BID can be formed.
- A group of petitioners can also lobby the government to initiate a local improvement district (LID). An LID is defined as a “geographic area in which real property is taxed to defray all or part of the costs of a public improvement. The distinctive feature of a special assessment is that its costs are apportioned according to the estimated benefit that will accrue to each property.”
- These benefits are established by the three principles of direct benefit, obligation to others and equal sharing. The costs may be apportioned based on property square footage or linear frontage. ... The EcoDistrict’s location and jurisdictional flexibility in regard to LID improvements will dictate what types of projects can be included in this financing strategy.
- As is the case with BIDs, LID payment obligations are linked to the property.
- In areas with PACE legislation in place (a recommended EcoDistrict policy tool) municipal financing districts or finance companies issue bonds to investors and then loan the proceeds to consumers and businesses to fund energy retrofits, both in the commercial and residential sectors. The loans are repaid over the assigned term (typically 15 or 20 years) via an annual assessment on owners’ property tax bills. One of the most notable characteristics of PACE programs is that the loan is attached to the property rather than the owners; therefore, the loan



transfers with change of ownership. PACE bonds offer the dual benefit of providing security to the issuing municipality, while giving private property owners access to the low-interest municipal bond market.

- The incremental assessment on a property owner's property tax bill is based upon the project cost, less any applicable tax credits or other incentives, and the municipal financing rate on the bonds. PACE financing allows participating property owners to begin saving on energy costs while paying for the improvements. This usually means that owners' energy savings are equal to or greater than their property tax increase.
- PACE districts function similarly to BIDs and LIDs, with a couple of major differences: participation is voluntary and funding is specifically targeted toward renewable energy installations and/or energy-efficiency improvements. The PACE model can also be applied to other areas of environmental improvement such as stormwater management or even integrated multipurpose investments.
- The concept of a parking benefit district (PBD) is fairly simple: A portion of parking meter revenues —charged at rates calibrated to result in 85% occupancy — are used to fund neighborhood- or district-scale improvements.
- Unfortunately, there are many pitfalls in relying on voluntary contributions or memberships [including] an unpredictable cash flow [and] “free rider problem”.
- Tax increment financing (TIF) uses future gains in taxes to finance current improvements, which theoretically will create the conditions leading to those future gains.
- In Portland, urban renewal areas (URAs) can use TIF funds to improve rights of way by developing green streets, bike boulevards, and other transportation infrastructure.
- System development charges (SDCs), also known as impact fees, are implemented by a local government on new/proposed development or land-use changes to help pay for the costs that the new development may impose on public services, including expanded off-site capital improvements such as roads, schools, or sewer systems.
- Climate benefit districts (CBDs) offer a hybrid approach combining traditional tax-assessed financing mechanisms with elements of service/benefit district functionality.
- Currently, a draft CBD bill in Washington is seeking sponsors for adoption in the fall 2010 state legislative session.
- Similar to LIDs, CBDs can be formed through a public petition process or at the discretion of the city government. Despite the fact that CBDs are created through local government, CBDs are responsible for their own debt and financial endeavors. The city or state cannot be held responsible for satisfying unmet CBD financial obligations.



15. Savills Plc, *Valuing Sustainable Urbanism – An Overview of the Report: Measuring and Valuing New Approaches to Residentially Led Mixed Use Growth*, London, UK, 2007.

- There is plenty of evidence about the right and wrong ways to go about planning our future, and there is a gathering consensus – led by the Prince’s Foundation for the Built Environment, and increasingly adopted by government in successive white papers – that the way forward is ‘sustainable urbanism’ (or in American parlance ‘new urbanism’).
- Sustainable urbanism...has three basic aspects: environmental, social and economic.
- The problem of delivery is multifaceted, however we would underline two key aspects: Property investors, developers and landowners suspect that sustainable communities, with their mixed use, mixed tenure layouts and precedence for pedestrians and public transport users over the car, are more costly to plan and develop; and planning authorities are not well enough informed about the social, environmental and economic benefits which are associated with sustainable development, to incorporate these more enlightened principles more robustly in their guidelines, nor confident enough to work to actively procure this form of development[.]
- The Prince’s Foundation for the Built Environment has...identified the following as features of ‘sustainable urbanism’: mixed use; mixed tenure; mixed housing type; good public transport connections; walkable neighbourhoods; relatively high net densities; well integrated open space; opportunities for a range of work/lifestyle choices.
- Unlike more conventional approaches to high density, sustainable urbanism embodies a variety of property types, which allows large scale expansion to be sustained by creating desirable places in which people want to live.
- In order to estimate the value generated by each of the three approaches to urban development [sustainable, standard and old], the different types of land use were measured for each, residential and commercial, and values attached to them. The value of each of the schemes was derived by calculating an average value across property types on each of the sites. Values were obtained using recent sale information from the land registry, and were then grossed up based on the mix of properties.
- It is clear from these case studies, while acknowledging the small size of the sample, that particular market circumstances have an impact on the level of value enhancement associated with sustainable urbanism.
- The financial analysis of the three case studies here suggests that there is likely to be a sufficient revenue surplus, after developer margin is allowed, to fund substantial additional build costs without the commercial viability of the sustainable model being threatened.
- It is clear from the report that investment in early master planning and associated quality control confers potentially higher land value.
- Since, however, much of this early work requires upfront costs - although it can also bring benefits, by for example expediting the achievement of planning permission - new and creative



approaches to funding may be needed to ensure value capture is maximized: these could include vehicles enabling landowners to maintain a stake in the development and as a result realise some of the end value generated by it.

- All developments now face higher build costs in any case in the face of regulation on green issues and planning policies relating to housing mix. Moreover, developers are now having to provide non-residential units on site for local amenities in order to be given planning permission for large sites. Development procured to the principles of sustainable urbanism turn this necessity into a virtue and through careful masterplanning these features can assist to create value rather than operate as a burden on development. In terms of project procurement, the process of development is likely to be assisted by a single landowner or 'master developer' fulfilling the role of masterplanner and promoter, releasing tranches of land over time, and controlling the pattern and quality of development through tightly controlled development agreements, design codes and other quality control mechanisms.
- If there is a good commercial case for sustainable urbanism, of which landowners and developers need to be aware, it is equally true that many social benefits are associated with good urban design, which governments and planning authorities need to take note of when issuing guidelines for urban developments in the coming years. These fall into five main categories: environmental benefits, especially in the form of reduced carbon emissions; reductions in crime and the fear of crime; improvements in health and well-being; and the reductions in social exclusion and economic benefits associated with important features of sustainable urbanism such as mixed tenure and mixed use.
- Another key element in creating successful, balanced communities is the way in which different housing types are accommodated in the neighbourhood plan. Experience at Poundbury suggests that "pepper potting" tenure types, rather than segregating affordable housing within a development helps to promote social inclusion.
- Mixed tenure and pepper potting cannot on their own solve the problems of social exclusion and poverty of course, but they can contribute significantly towards creating sustainable communities which offer a higher quality of life and an opportunity for those who are economically challenged to break out of concentrations of poverty and social disadvantage.
- A central feature of planning policy for many years was 'zoning', which segregated industrial property, residential property and sometimes retail activities into different areas.
- Research by the New Economics Foundation has established that, where households and retail and other businesses are in close proximity, an economic multiplier effect is generated, whereby money spent in the local economy is amplified by subsequent cycles of spending.
- At present, the property market exhibits a strong preference for single-use schemes, because developers often perceive them to be less complex and therefore more profitable. Mixed use schemes are generally developed in response to planning policy. The valuation study at the heart of this report challenges the view that sustainable developments which include a mix of [stet] of



uses, are commercially unattractive. In many circumstances they will certainly be commercially advantageous, and will increasingly be recognized as such, since the housing growth agenda involves developments on such a scale that a mixed use approach will be inescapable.

16. Smith, Doug, *Green Building Financial Incentives*, AIA Seattle Committee on the Environment, Seattle, WA, 2007.

1. Direct Green Building Payback

- a. Traditional savings – more efficient buildings have lower utility bills.
- b. Easy to measure but long paybacks.

2. Indirect Green Building Payback

- a. Health, well being and productivity.
- b. Hard to measure but fast paybacks.

3. Utility Grants

- a. Requires discussion and a signed agreement with utility.
- b. Electric power.

- i. Up to \$1 to \$2/sq ft for 30% to 50% energy savings.

For PSE Energy Smart program see http://www.pse.com/solutions/ForBusiness_EfficiencyPrograms.aspx

For SCL Energy Smart program see <http://www.seattle.gov/light/conserve/>

For Snohomish County PUD see <http://www.snopud.com/?p=1790>

For Tacoma Power see http://www.tacomapower.com/Business/new_construction_efficiency_services.htm

- c. Natural gas.

- i. For PSE Energy Smart see http://www.pse.com/solutions/ForBusiness_EfficiencyPrograms.aspx

- ii. For CNG see <http://www.cngc.com/residential/specialprogs.asp>

- d. Water & wastewater.

- i. Contact utility. Programs vary widely.

- ii. Incentives are larger for wastewater reduction than water efficiency.

- iii. Incentives are an order of magnitude lower than for energy.

- iv. For SPU and greater Seattle metro area see <http://www.savingwater.org/>



e. Others (storm, solid waste, district heat, etc.)

4. Utility Rebates

a. These are fixed rebates, for example a fixed rebate for each incandescent bulb replaced with a compact fluorescent.

5. Federal Tax Incentive

a. EPACT 2005 - Commercial Building Incentive

i. Buildings - \$1.80/sq ft federal tax deduction for 50% total savings or \$0.60/sq ft for 16 2/3% savings individually on Envelop, Lighting, or HVAC.

ii. Private Projects. Owners take the deduction.

iii. Public Projects. Design teams take the deduction.

iv. Complex. See IRS rules for details. Energy modeling per ASHRAE 90.1, installation verification, and so forth.

6. Demonstration Technology

a. Low or no cost materials, equipment, and installation from manufacturers, suppliers, and contractors.

7. Third Party/ESCO

a. Low or no initial cost in return for share of the savings.

8. WA State Incentives

a. Many programs, see <http://www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=WA&RE=1&EE=1>

9. City of Seattle Incentives

a. LEED Silver zoning incentive, see <http://www.seattle.gov/dpd/GreenBuilding/OurProgram/PublicPolicyInitiatives/DevelopmentIncentives/default.asp>

b. Green factor, see <http://www.seattle.gov/dpd/permits/greenfactor/>

10. King County Incentives

a. LEED Silver, Gold, and Platinum grants of \$15K, \$20K, & \$25K, see http://www.seattle.gov/dpd/stellent/groups/pan/@pan/@sustainablebldg/documents/web_informational/dpdp_018427.pdf

b. Other incentives, see <http://www.metrokc.gov/dnrp/swd/greenbuilding/>

11. Foundations



a. Bonneville Environmental Foundation, water shed and renewable energy grants, see <http://www.b-e-f.org/grants/index.shtm>

b. Kresge Foundation Green Building Initiative, see <http://www.kresge.org/content/displaycontent.aspx?CID=26>

12. Finance

a. Green loans from participating financial institutions.

13. References

a. WSU Energy Extension Office, see http://www.tacomapower.com/Business/new_construction_efficiency_services.htm

b. Energy Tax Incentives, see <http://www.energytaxincentives.org/>

c. Database of State Incentives, see <http://www.dsireusa.org/index.cfm?EE=1&RE=1>

d. Better Bricks, see <http://www.betterbricks.com/default.aspx?pid=programs incentives>

17. Sukhdev, Pavan, *Why Corporation 2020? The Case for a New Corporation in the Next Decade*, Island Press, Washington, D.C., 2012.

- There is an emerging consensus amongst thought-leaders in government and business that all is not well with the market-centric economic model that dominates today's world.
- The corporate world must be brought to the table as planetary stewards, and not value-neutral agents free-riding their way to global resource depletion.
- Corporate externalities—the unaccounted costs to society of doing “business as usual”—cost an estimated \$ 2.15 trillion, or 3.5 percent of global GDP in 2008 measured across just the top 3,000 listed companies.
- Around \$1 trillion a year in harmful subsidies (including over \$650 billion of price and production subsidies for fossil fuels and subsidies for unsustainable agriculture and fisheries) promote “business-as-usual” while obscuring its associated environmental and societal costs.
- Corporation 2020 creates not just financial capital for shareholders, but also human, social and natural capital for society at large. It generates not negative but positive externalities, promoting and sustaining the wellbeing of human populations and ecosystems. Its performance—measured holistically—aggregates to a green economy that does not reward the creation of environmental risks and ecological scarcities.
- Nitrogen can reduce the resilience of coastal and freshwater ecosystems through eutrophication, and of terrestrial ecosystems through acidification. Phosphorus accumulation can also cause oxygen-depleting events in marine ecosystems.
- Human activities now convert more nitrogen from the atmosphere into reactive forms than all of the Earth's natural terrestrial processes combined, about 150 megatonnes per year (Mt/year).



- It is often said that current and projected rates of biodiversity loss constitute the sixth major extinction event in the history of life on Earth, and the first to be driven specifically by the impacts of human activities on the planet.
- About 2.8 billion people live in areas facing water scarcity, and more than 1.2 billion of them—one sixth of the world’s population—live in areas of physical water scarcity. Another 1.6 billion people live in basins that face economic water scarcity, where human capacity or financial resources are likely to be insufficient to develop adequate water resources even though adequate water in nature is available to meet human needs.
- Humanity may be reaching a point where further agricultural land expansion at a global scale may seriously threaten biodiversity and undermine regulating capacities of the Earth System, by affecting the climate system and the hydrological cycle. According to Rockström et al., “As a planetary boundary...no more than 15% of the global ice-free land surface should be converted to cropland.” That compares with 12% of the global land surface that is currently under crop cultivation.
- Just as economic efficiency is often presented (either mistakenly or unethically) as an economic obstacle to achieve a green economy, so also political mandate—the democratic need to negotiate every major decision with voters—is often presented as a political obstacle towards the same solution.
- Rapid and well-organized transitions towards a green economy can steer humanity clear of the planetary boundaries, and in order to achieve that transformation, it is also necessary to transform, over the same timeframe, the economy’s most important institution: the corporation.

18. Trucost PLC, *Natural Capital At Risk: The Top 100 Externalities of Business*, April 2013.

Natural capital assets fall into two categories: those which are non-renewable and traded, such as fossil fuel and mineral “commodities”; and those which provide finite renewable goods and services for which no price typically exists, such as clean air, groundwater and biodiversity.

Depletion of ecosystem goods and services, such as damages from climate change or land conversion, generates economic, social and environmental externalities.

In the absence of regulation, these costs usually remain externalized unless an event such as drought causes rapid internalization along supply-chains through commodity price volatility (although the costs arising from a drought will not necessarily be in proportion to the externality from any irrigation). Companies in many sectors are exposed to natural capital risks through their supply chains, especially where margins and pricing power are low.

Economy-wide, these risks are sufficiently large that the World Economic Forum cites ‘water supply crises’ and ‘failure of climate change adaptation’ along with several other environmental impacts among the most material risks facing the global economy.



- The majority of unpriced natural capital costs are from greenhouse gas emissions (38%) followed by water use (25%); land use (24%); air pollution (7%), land and water pollution (5%) and waste (1%).
- Trucost’s analysis has estimated the unpriced natural capital costs at US\$7.3 trillion relating to land use, water consumption, GHG emissions, air pollution, land and water pollution, and waste for over 1,000 global primary production and primary processing region-sectors under standard operating practices, excluding unpredictable catastrophic events. This equates to 13% of global economic output in 2009. Risk to business overall would be higher if all upstream sector impacts were included. All impacts are in 2009 prices and reflect 2009 product quantities, the latest year for which comprehensive data were available.
- This study had five high-level steps:
 - 1) For each EKPI Trucost identifies the impact ratio (the social cost or abatement cost per unit of revenue) for 532 business sectors (see Appendix 3). These are significantly higher for upstream sectors where the product is resource- or pollution-intensive and has less economic value-added (see Table 4).
 - 2) For the highest-impact sectors (primary production and some primary processing) (see Appendix 3), Trucost gathered production data by country and applied country-specific impact ratios.
 - 3) These results were then aggregated to the regional level.
 - 4) A “Global 100” ranking was then produced to identify the top 100 externalities (EKPI by region-sector), and a “Global 20” of the top 20 region-sectors’ cumulative impacts across the six EKPIs.
 - 5) Finally, Trucost’s EEIO model (see Appendix 2) was used to estimate the extent to which sectors are exposed to these upstream impacts modeled.
- EEIO modeling maps the flow of goods and services through an economy. By estimating and valuing the EKPIs associated with those flows, it is possible to model how a sector’s environmental impacts accumulate through the tiers of its supply chain. The Trucost model is constantly expanding and is currently based on 532 sectors. Therefore the potential number of transactions between sectors amounts to several trillion, each of which is associated with an environmental impact. The analysis identified companies that had a high combined direct and indirect (supply chain) impact, where indirect impacts were greater than direct impacts, to isolate those sectors, often consumer goods manufacturers, whose impacts are predominantly “hidden” upstream.
- The global 100 environmental impacts by sector and region result in costs totaling US\$4.7 trillion, or 65% of the total primary sector impacts identified in this study. The region-sector impacts by EKPI are combined to create a ranking of the top 100 environmental impacts globally in Table 5. The majority of costs are due to GHGs (36%), water consumption (26%) and land use (25%). Addressing impacts from air, land and water pollution could also result in notable environmental



costs savings. The top five impacts are GHGs from coal power generation in Eastern Asia and Northern America, land use from cattle ranching in South America and Southern Asia, and water use in wheat farming in Southern Asia. Findings are based on their share of total costs across the six EKPIs.

- No high impact region-sectors generate sufficient profit to cover their environmental impacts.

19. *Climate Action Plan Building Energy Technical Advisory Group, Preliminary Recommendations, Seattle, WA, 2011.*

- The policy and program recommendations...represent an aggressive suite of actions to dramatically reduce greenhouse gases in Seattle by 2050.
- Eliminate barriers to financing and adjust energy and incentive price structures to make deep retrofits more cost-effective. A number of the recommendations in this report reference a balancing between a call for deep energy reductions to meet carbon reduction goals and the practical reality that most retrofit decisions are made considering cost-effectiveness. Each of these other recommendations will have some level of success in implementation on its own, but the right energy pricing and efficiency incentive structures are key to widespread uptake of energy efficiency and carbon reduction activities. In fact, some strategies only become cost effective if such pricing and incentive programs are implemented.
- Legislative barriers [include] PACE financing and fuel-neutral meter-based financing through utilities would require state legislative action to implement. Currently, SCL could implement on-bill, meter-based financing only for electrically-heated buildings.
- Energy price structuring, if it resulted in price escalations, would disproportionately affect low-income residents. The City needs to ensure that eligible low-income households are enrolled in Seattle City Light's rate assistance program and that low-income weatherization programs are funded and working effectively. [Additionally we need to] shift away from "low-rate" mentality to "low-usage/bill" mentality [to aid rate-payer understanding] that rate[s] may go up but bills may lower to more than offset increased rate.

20. *UBS (Hugi, C., Gamboni, G. and Stiehler, A.), Wealth Management Research: Water, 2010.*

- With water demand increasing and supplies under stress, we prefer companies that provide sustainable solutions to efficient water use along the whole water value chain—exploitation, treatment, distribution, use and discharge.
- While also suffering from the recent financial turmoil, Fig. 6 shows that water-related investments have significantly outperformed the MSCI World Index over a longer time period. ...Data collected by OECD indicate an increase in prices over the last decade for water supply and sanitation services, typically however from very low levels.



- These tariffs provide little incentive to use water efficiently and contribute only fractionally to cost recovery. Unsurprisingly the OECD concludes that for average household incomes the water supply and sanitation bills do not represent a major expense.
- Ultimately only an adequate pricing of resources will allow for an environmental, social, economic and financial balance in the water sector.
- Metering and setting financial incentives is crucial[.] A recent report from the OECD confirms that water metering is still not very common in OECD countries. The data indicate that efforts have been made to increase cost recovery from tariffs in many OECD countries and that operation and maintenance costs of domestic and industrial water and wastewater services are generally covered. However, an adequate marginal cost pricing to increase and incentivize economic efficiency is not yet feasible. Full cost recovery or even accounting for externalities still seems to be a remote vision in most cases, with exceptions including the UK and Switzerland. This means that there is essentially no return on capital employed in water assets despite being worth several thousands of USD per capita. Therefore operators have little incentive to invest and instead write any remaining value off. This further increases the need to renew and replace an aging water infrastructure and does not attract the urgently needed money for improvement[.]

21. UNEP Finance Initiative, *An Investors' Perspective on Environmental Metrics for Property*, Geneva, Switzerland, 2011.

- If we are to accelerate and expand the crucial contribution that the built environment can make to the reduction of carbon emissions, property owners and fund managers need to engage much more actively than they have done to date in the development of practicable environmental metrics for buildings. By making metrics systems more compatible, simpler, more relevant to investors and more capable of capture across whole portfolios, we believe this can be done.
- In this way, we believe investors, environmentalists and policy-makers can be furnished with the data they need to better understand the environmental performance of the current built stock, increase the potential to understand how environmental and investment performance are linked, and to assist policymakers to take appropriate action and measure progress.
- Without [meaningful property metrics], property investors and government policy makers can neither understand the current environmental performance of existing and new buildings nor gauge the rate of progress being made to reduce their harmful greenhouse gas emissions and other environmental impacts.
- Environmental metrics for buildings have largely developed without material input from the property investment community [and] are impractical and growing confusion and irritation in the market.
- We can observe...that environmental performance metrics have, to date, focused on understanding the impact that a building has on the environment.



- Clearly, if and when the environmental performance of buildings is shown to impact upon the investment performance of their property investments, then it becomes the fiduciary duty of investment professionals to understand how the environmental attributes of their assets is related to the current value and future investment performance.
- In this regard, apart from ‘energy efficiency’, there is as yet still limited understanding of how specific environmental features of buildings impact current future investment values and performance. This also means that investors are currently being expected by metrics providers to expend considerable cost and effort gathering data for which they can potentially discern some reputational but no clear financial reward.
- Over and above understanding the relationship that environmental and investment performance might have to each other, there is a second clear interest that property investment managers might have in the environmental performance of their overall portfolios, namely if, for reputational or investment performance reasons, it influences whether asset owners’ hire them as managers.
- We should acknowledge at this point that establishing the relationship between property environmental and investment performance requires substantial amounts of data either across a wide range of properties at any given time or for the same properties over a long period of time, or both. Such data will take time to assemble but the sooner we begin, the sooner we will have answers.
- To gain the ‘buy-in’ of asset owners and property fund managers and truly succeed in establishing a widespread system of environmental performance measurement, metrics providers need to understand the operational dimension of what they are asking for. This may require them to be more ‘tactical’ and less ‘purist’ in their approach to the investment community - at least in the early years.
- [R]esponsible property investors want to use metrics for [three reasons]:
 - 1) [Investors] will increasingly need to understand not only where they stand in absolute terms but also in relative terms to others with respect to both the current environmental performance of their funds and how it is changing over time. This suggests they need to understand questions [including] (a) and (b) the prevailing absolute and relative environmental performance of their properties and aggregated portfolios and (c) and (d) the change over time in the absolute and relative environmental performance of their properties and aggregated portfolios.
 - [In order] to link environmental performance metrics with investment performance metrics... asset owners and managers will want to understand how specific ‘sustainability-based’ variables are impacting their asset values and portfolio performance.
 - [And] metrics should also act as clear signals for action. As such, investors will want to see information on the costs of making different types of environmental improvement; understanding the scale of any investment benefits (through, say, additional income



or reduced outgoings), and establishing the pace at which economic benefits from environmental action will accrue.

- 2) [Investors] require metrics on [certain] aspects of their operation [including] energy usage, management and generation; carbon dioxide emissions; water usage; property accessibility; asset vulnerability (climate change).
- 3) environmental metrics for property [should] be developed to increase their adoption and impact on the activities of property investors.
- Over and above improving their co-operation, we would strongly urge metrics providers to continue to develop relevant 'short form' versions of their full metrics services to more readily facilitate the construction of aggregated measures of environmental performance to cover portfolios, areas and even whole markets.
- In our view, if property environmental metrics providers want to gain better traction with investors, they need to do, at least, the following:
 - i. prioritise those variables with the greatest potential to impact on value and performance – other variables can be added later;
 - ii. be moderate in the requests they make; ask only for essential data initially to make the collection task initially less onerous for investors;
 - iii. develop simple but meaningful measures that are easy to understand and to provide data for; and iv. ensure metrics are applicable at portfolio level in addition to asset level.
- [The United Nations Environment Programme Finance Initiative Property Working Group (UNEPFI PWG) are establishing a sub-group from within our membership to review and report on [these] issues.



APPENDIX 2. SEATTLE, WASHINGTON CLIMATE ACTION PLAN HIGHLIGHTS

Transportation and Land Use Actions by 2015:

- Develop a tool to foster consistent consideration of greenhouse gas emissions impacts and opportunities to reduce them when updating and implementing transportation and land use plans.
- Consider a transportation modal hierarchy as part of the 2015 Comprehensive Plan update in order to address greenhouse gas reductions, safety, mobility and funding priorities.
- Research the benefits of pricing policies on climate protection, transportation and community goals (e.g. reduced congestion, improved air quality, revenue generation) and their potential social equity impacts and solutions by examining the experience of other communities.

Building Energy Actions by 2015:

- Begin implementing a plan to deploy smart meters that provide real-time energy use information to all Seattle City Light customers.
- Develop and test a program for rating home energy performance when a house is listed for sale.
- Make the energy benchmarking scores of the City's municipal buildings publicly available.
- Develop a Resource Conservation Management Plan to guide efficiency investments in City facilities, including developing a strategy for routinely conducting "tune ups" of City facility energy systems (known as retro-commissioning).
- Require building energy audits for the largest and least efficient commercial and multifamily buildings to help identify cost effective improvements.
- Transition the pilot Community Power Works -home energy retrofit program to an established and permanent program that assists homeowners with home energy efficiency upgrades.
- Pilot a retro-commissioning incentive program to provide financial and technical assistance to tune up energy systems in existing commercial buildings.
- Support legislation which authorizes a property tax exemption for rental housing owners who undertake significant upgrades to increase energy efficiency.
- Partner with property owners and managers to identify the most compelling financing tools (Property Assessed Clean Energy Bonds, Performance Based Financing, etc...) for energy efficiency upgrades in commercial buildings and outline a plan to help bring the financial mechanism to market.
- Pilot a performance-based utility incentive program that would pay for actual energy savings over time instead of providing an up-front payment for projected savings.



- Continue improving permitting processes to promote the most sustainable buildings, such as the Living Building and Deep Green Pilot Program.
- Partner with Seattle Public Schools to identify opportunities to build Living Building Challenge or Deep Green schools.
- Continue increasing energy efficiency standards in the Seattle Energy Code over time.
- Evaluate opportunities for the energy code to focus on total energy performance (Outcome-based Codes) instead of prescriptive requirements.
- Require the energy performance of buildings undergoing major renovation or change of use (known as “substantial alteration” in code) to come close to the energy performance requirements for new buildings.
- Develop an alternative energy master plan that focuses on low-carbon energy solutions, such as district energy, solar energy, and geothermal energy in the public right-of-way.
- Continue Seattle City Light support for solar energy through net metering, which reduces the quantity of electricity billed to the customer by the amount of solar energy produced.

Waste Actions by 2015:

- Ban the following materials from residential and business garbage to increase recycling: asphalt paving, concrete, bricks, asphalt shingles, plastic film, clean wood, residential food, and compostable paper.
- Phase-in bans on the following construction and demolition waste from job sites and private transfer stations: recyclable metal, cardboard, plastic film, carpet, clean gypsum, clean wood, and asphalt shingles.
- Expand investment in existing residential and business programs for reuse and organics management to reach more residents and businesses.
- Continue to support and expand material exchanges and reuse programs, and promote building with salvaged and reclaimed materials.
- Seattle Public Utilities achieves carbon neutrality through operational emission reductions, local emissions reductions projects, and GHG offsets.

Preparing for Climate Change Actions by 2015:

- Develop a comprehensive adaptation strategy that integrates the City’s planning efforts across all relevant departments and considers both the cost of implementing actions to improve our ability to adapt and the potential cost of inaction. Engage residents in developing the strategy.
- Implement Advanced Metering to begin the transition to a “smart grid” to help meet customer demand, detect system overloads that could be caused by heat events or other issues, and reroute power to improve system reliability.



- Work with federal and academic research groups to downscale climate data for the watersheds supplying the city's water. Use this information to update the water supply assessment and explore impacts on the intensity of forest fires, turbidity, the timing of fall rains, and precipitation in the city.
- Continue to invest in water conservation programs reducing per capita water use to help meet future needs and to build adaptive capacity.
- Continue to evaluate the impacts of climate change on the drainage system and identify strategies for enhancing resilience.
- Adopt a Green Storm Water Infrastructure (GSI) Policy and implementation plan affirming GSI as the preferred storm water management strategy, and facilitate multi-agency implementation, including expanded asset management, operations and maintenance programs, and funding.
- Evaluate climate impacts to transportation infrastructure and operations, including critical needs for emergency response, goods and services movement, and community access. Identify and prioritize strategies for enhancing resilience.
- Pilot an advanced green building standard, such as the Living Building Challenge, on a City facility to assess its appropriateness for resilient design and to promote similar levels of green building in the private market.
- Review development codes and incentives, and identify barriers and potential opportunities, to encourage private development to become more resilient (e.g. increasing on-site storm water retention).
- Assess and plan for the impacts of climate change on public health, including the disproportionate impacts on lower income, recent immigrant, older, and very young residents, who are at greater risk of health impacts from climate change.



APPENDIX 3. ECONOMICS OF CHANGE WASHINGTON WORKSHOP

Hosted by the International Living Future Institute in Seattle, Washington on June 28, 2013

Meeting Notes and Final Participant List

Overview

1. Setting the scene - summary of Phase 1 Economics of Change report (led by Jason T, Stuart, Theddi)
2. Amalgamation of group's barriers + opportunities (see below)
3. Prioritization exercise
4. Small group work on top 2 priorities: infrastructure and policy (see below)
 - a. Brainstorm elements of targeting barrier/opportunity
 - b. Agree action plan (partial)
5. Explanation of process for setting WA legislative priorities via WA Environmental Priorities Coalition
 - a. Executive directors convene after session and brainstorm for next session
 - b. Detailed proposals/campaign plans with partners, outreach, and political strategy are submitted
 - c. Priorities are established through voting - up to 4 selected
6. Group discussion of priorities for 2014 session
 - a. Funding for green infrastructure
 - b. Toxic Free Washington with expanded scope including building industry
 - c. State procurement, i.e. no Red List materials
 - d. Menu of green building standards for the state to adopt, e.g. LEED Silver or better, Salmon Safe, Living Building Challenge, etc.
7. Next steps
 - a. Re-group in 4-6 weeks to further develop these 4 legislative priorities; Patti Southard will convene the next meeting
 - b. *Economics of Change* policy workshop engaging Oregon leadership in Portland in September 2013



Discussion of group's barriers + opportunities

We have an opportunity to scale lessons learned from regional successes to develop policies, regulations, and incentives that shift investment and catalyze positive externalities in the built environment

Driving Forces

Our kids and grandkids – passion

Engagement of public health

Natural disasters

Mindshift – human caused

Technological changes more decrease in cost

Paradigm change re: risk + response and re: us vs. nature

Ecological and human health values – allergy epidemic

Growing awareness of our connectedness – keeping up w/neighbors and “rising up”

Money – taxpayer costs, saving it, using it wisely, income and equality issues

Global competition for resources, quest for innovation and creativity

Social equity outside of a building – benefits to a community

Habitat being addressed

Now opening to talk about these issues – acknowledgement of extreme situation

Transparency – decisions, valuation – some at highest levels

Generational shift

Lots of great examples – Portland or Seattle, political will

Impact investing

Telling the store – infrastructure needs to be upgraded – maybe we don't upgrade it

Eliminating waste

Energy security

Foot and water security

NIMBYs



Restraining Forces

Lack of cultural competency to convey community benefits / framing

How to connect insurance to family and to building owners - siloed, lack of systems thinking - this is complicated, this is hard to do,

Health data measurement and accessibility

How to inform people to take activity - media and communications, how we share information

Political will

Lack of data and knowledge that informs healthy building

Flywheel of current built environment

Risk and response

Political environment, corporate influences create active resistance and inertia

Building permits and our slow to change bureaucracy

How we do or do not measure our progress

Financing discipline that heavily discounts what happens in the future

Laws underpinned in the public interest - need to better define public interest

Inconsistent investment re: institutional development

Policy development - change what we measure

How to capture credits for high performance buildings

No umbrella group tying all of this together

Can be exhausting working on this

How to market energy efficiency - enhance sexy factor

We are talking to ourselves

Need to engage brokers

Market demand

Small group work notes

1. Policy development topic

Priorities include

- change what we measure



- 2030 District policy on water externality
- what do we want measured or valued
- how do we reframe to whole systems thinking, i.e. an integrated design process for policy
- where can we make a difference
- how do we incentivize systems thinking
- set up internal markets between different agencies

Discussion

- what are the different policy levers?
- Example of King County Living Building program
- Three different agencies interested in Living Buildings
- Talked about performance not rating systems
- Including Lifecycle Cost Analysis
- comprehensive targeted engagement
- systems thinking to include agriculture, cities, community, etc
- individual definitions “what do you need?”
- turns into aggregated, a menu of opportunities
- Look at co-benefit/externalities stream over designated time period?
- cultural competency
- understanding barriers, e.g. education, short-term thinking
- focus on performance outcomes
- lower systemic cost (life cycle cost) and higher value
- target “caveats” to remove excuses from legislation/codes/regulations
- emphasize public good over time
- translate into policy language and numbers
- lacking solid numbers to do so
- use words like “demonstration” and “pilot” to create space for innovation
- who’s bridging the gap between info (aggregated) and audience (decision makers, the “right audience”)



- concrete incentives
- tax credits
- low financing
- need the biggest mega phone, brightest searchlight to see it, see it, see it and hear it, hear it, hear it
- package policy challenges that have enabled the change we want
- roadshow and how to
- places of intervention could include
- Earth Day 2014, 2015 when focused on green cities
- Mayor conferences
- lack of capacity at state level
- others need to lead, e.g. Issaquah, King County, etc
- amplify pilot living building projects
- state building code council
- appointed by Governor and trade
- opportunity for proactive appointments?
- underfunded
- needs to accelerate time frame
- add in energy and water conversation
- state budget set
- more cities in partnership
- lack of involvement east of Ellensburg
- facing massive water challenges
- great opportunity for solar
- competing for resources, e.g. agricultural water
- more agency coordination
- review ILFI paper on optimal scale of wastewater treatment plants



2. Infrastructure topic

- Need to define “infrastructure” – where does the road, pipe, etc. end? And who is responsible?
- Do we have the dollars to do green infrastructure already? Or do we need more?
- Re-visioning infrastructure – is it internal or external to the building?
- Consolidated vs. distributed infrastructure
- Decentralized systems and incentives to pay for them
- Impacts on daily life
- What to do with failing infrastructure? Green retrofit?
- Tools for infrastructure decision-making
- Seattle leadership on infrastructure
- Nature as infrastructure
- Connection with taxpayer costs
- Cultural competency
- Integration
- Creating a common language
- How do we achieve more inter-governmental “utility bartering”?
- How to scale Bullitt Center towards “cooperative community ownership”
- Investments – lifecycle analysis on how we publically fund projects
- How to count water as an asset on the books of the water utilities e.g. work of Earth Economics
- Financing/incentive mechanism?
- Interagency coordination?
- Dollars for green infrastructure
- Ideas on tools:
- Assessment that incorporates “systems” thinking into decisions on utilities/infrastructure needs and updates (maintenance, ownership, climate change impacts)
- “Green” infrastructure as a standard option as part of cost/benefit analysis
- Enhanced lifecycle analysis



Other priority topics not discussed in small groups:

Health benefits

- codes and regulations as leverage points
- soft spot, how you sell it

Lack of political will

Financing discipline

- net-present-value (NPV) vs net-future-value (NFV)
- discount rates
- incentives and rebates

Lifecycle cost analysis in full systems perspective

INTEGRATED POLICY DESIGN PROCESS in analogy with Integrated Green Building Design Process

Communicating our successes

Undertake a mapping process on the successful green building ordinance

Value of getting Bullitt Foundation grantees together

Who's not in the room? Who to add for ongoing discussions?

- State of Washington
- Cascade Water Alliance
- Housing Development Consortium
- Low-income housing representatives
- Financing community
- Public Health community
- Kat Taylor + Jay Easterbrook/Seattle at One PacificCoast Bank
- Craft3
- Jules Kopel-Bailey at Innovate Washington
- Building Owner's and Managers Association (BOMA)
- Utilities
- Urban Land Institute
- Insurance industry
- Washington Toxics Coalition



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APPENDIX 4. OREGON POLICY WORKSHOP: SETTING THE AGENDA FOR POLICIES IN SUPPORT OF A RESTORATIVE BUILT ENVIRONMENT

Hosted by the International Living Future Institute in Portland, Oregon on September 13, 2013

Meeting Notes and Final Participant List

DISCUSSION HIGHLIGHTS:

AGENDA SESSION 1 - BACKGROUND BRIEFING

Policy framework:

- We must start with our end goal in mind and design integrated policy shift(s) to get us there.
- Rigor is needed in order to seize the opportunity of this moment.
- Policies are sometimes needed to change the social narrative.
- Change can be achieved by combining quantitative and qualitative, e.g. charrettes making data driven decisions alongside “choosing by advantages”.
- Risk of setting today’s best practice as the new regulatory code and thus hindering our ability to reach future goals and tomorrow’s best practice.

Contextual opportunities, include:

- Oregon Bill 2801 offers an opportunity as appraisal must value energy efficiency, as well as encourage training for appraisers.
- ULI is now talking about “healthier” environments, which may be easier to engage than “sustainable”.

The power of narrative

- A true metaphor is needed; “Frames trump facts”.
- Perception can be as, if not more, powerful than reality, for example bottled water.
- It is important that we do not assume that everyone wants to be healthy.
- HUD is currently studying healthy community indicators.
- The message of “healthy” buildings may restrict the discussion and action to internal building issues and thus not allow for community-scale changes and widespread market transformation that are desired.
- Beware of solely focusing on monetization as it imparts value and thus says all that is monetized has no value.



- Recent local precedent of power plant commission changing conversation and valuation.
- Studies and stories.

SESSION 2 – GROUP DIALOGUE

- Outcome-based thinking must be part of narrative and also who's at risk for non-compliance, which must include building owner along with designer & contractor.
- Make the vision relevant to various, different audiences.
- Interpret the overall vision through tailored value propositions for stakeholders.
- Value generated present is needed within the investment fraction by understanding the current paradigm then engineering it to get out of it the values that we all want (i.e. social & environmental in addition to economic).
- The public sector must be enabled to think beyond first low cost; current paradigm seems to say that low initial cost = good stewardship.
- Need to work on definition of “cost effectiveness” within public utilities.
- LCA lacks clarity of definition, is missing a national framework within code and is often confused with LCCA, total cost of ownership, and other concepts.
- Suggest it is worth approaching first innovators to identify the reasons for their work, e.g. John Russell's retrofit on Market Street.
- Need more case studies of decision-making process as well as translation of the story beyond the initial innovators.
- Need the public sector to demonstrate value so that the private sector will follow. Or counterpoint: public sector has access to long-term investments that the commercial and residential market cannot and who tend to look for access to investment in 3-5 years.
- Need to show the pathway to return on investment – make it very clear.
- Perhaps two gaps: innovators GAP early adopters GAP mass market.
- Thus perhaps the public sector can show how to bridge the second gap between early adopters and general market, but cannot bridge the gap between visionary innovators and early adopters.
- This gap can manifest in individual projects, for example when project managers and all the way through supply chain may not understand Board of Directors visionary purpose.
- Opportunity to use schools as early adopters.
- Owner-occupied buildings as opportunity to bridge the gap, including real market value data.



- Existing projects must play a role in helping to provide information to others, including access to building owners.
- Transparency, for example with energy and water disclosures, offers opportunity for public understanding (if done simplistically, clearly and consistently) and policy shift.
- Message needs to go beyond saving money and focus instead on asset value plus tenant happiness / worker productivity.
- Challenge of behavior change results in some tenants being unhappy.
- It is not a building design problem, as we often thought, but instead a challenge of industry product development.

SESSION 3 - ADVICE

- Need communications and marketing industry involved in this discussion along with engagement professionals.
- National code involvement.
- 2030 was successful after so many others weren't because it offered clarity on ever-increasing needs thus should be a model: need to describe the continuum.
- Example from Lloyd EcoDistrict offers reality of marrying action with businesses' values, e.g. energy efficiency acted on when combined with other priorities, such as logo development, customer attraction planning, etc.
- Need dialogue about what is now important to x stakeholder group.

SESSION 4 - CLOSING CIRCLE: WHAT SUGGESTIONS WOULD YOU MAKE TO THE PROJECT TEAM GOING FORWARD?

- Near / mid / long-term objectives
- Ties into 2030 could be useful in helping to show value of building now as different from 30 years from now
- Valuing the social is very difficult but is needed, for example valuing equity, job creation, obesity, etc.
- Apply values and vision to policy problems and initiatives for next legislative session(s)
- Don't think too much but do; tangible work is needed
- Opportunity to work and learn together as EcoDistrict is currently working on Energy Efficient Action plan to translate vision into actions (that may involve a shift away from LEED to something else, maybe Energy Star)



- Clarity of standards alongside vision
- Public policy is about incentives, not prescriptive process; private policy is about the fraction.
- Demonstration projects from private (not public) sector owners are needed, e.g. working with NEEA and communicating comparative public values.
- Communicate nuts and bolts.
- Opportunity to engage beyond this group and across bioregion thus continuing to demonstrate our collective leadership in green building.
- Current work on a Living Building Challenge™ project highlights supply and demand issues and the need for more projects and more knowledge amongst practitioners about how to design, build, fund, operate, not just theory; And most people do not understand “externalities” so snappy, meaningful messaging is needed.
- Value externalities on front, price end; This is a market transformation project and thus we need to collectively identify barriers, prioritize them, agree goals of each organization, and share responsibilities for action across organizations.
- Do not underestimate constituencies (e.g. real estate); do not be afraid of incremental change; do focus on curated, contextualized, relevant, value-driven, real world, large-scale data.
- To address the triple bottom line involves the social bottom line, thus need indicators to measure across time and across space.

NOTES FROM FLIPCHARTS

Values & Vision

- Construct investments that give people what they are looking for
- Start with public sectors
- Benefits over time and in space
- Case studies of how decisions are made in visionary green building projects
- Who are the innovators that can carry this more broadly
- Schools as early adopter
- Asset value increase is the argument for green retrofits
- Who are the target audiences and how do we reach them?
- Multiple value systems
- Look at archetypal social metaphors “frames trump facts”



- Goal is to “mean” the same thing [to different audiences] not “say” the same
- Need to create cash flows now that can generate future sustainability

Definition of the Problem

- New procurement process [for entire buildings] creation (public sector) that is lifecycle based
- Shift from “cost” to long-term value
- Definition of “cost effectiveness” in utility industry good model
- No nationally accepted definitions of Life-Cycle Cost Analysis (LCCA) and Lifecycle Analysis (LCA) e.g. for materials
- Also look at Total Cost of Ownership (TCO)
- Split incentive between owner/tenant
- Construction industry does not work this way (understanding externalities)
- Inability of owners to “get at” value of high performance strategies
- Simple indicators
- Behavior change required of tenants
- Impact of materials used (currently) on energy, carbon, water, biodiversity, etc.

Issues

- Strategies for communication & marketing
- Ability to engage
- Code change = risk to developers, owners
- Phase code changes / stepped requirements
- Plan for needed research as policies implemented
- Listen to what the target audiences / stakeholders want / need – tie strategies to that BOTH “cause values” [what is our mission?] and “organizational values”

Other

- Performance – Actual / Who’s at risk? Responsible? Owners understanding their responsibilities
- Communication / Connection / Collaboration
- Value driven framework(s)
- “Translation” to various stakeholders
- Public sector building serving as bridge(s) to transition



- Quantifying the value of building re-use
- Owner-occupied buildings could serve as best transition/bridge for market
- Importance of transparency
- Lease model for PV [extend to other areas?]

Energy / Carbon

- Bill 2801 allows cost-effectiveness measures considered at the whole building level for the first time
- Transparency - Disclose!
- Public transparency - widely shared underlying data
- Protocols
- Code changing
- Connect with Public Utilities Commission (PUC)

Water / Stormwater / Wastewater

- Transparency in reporting
- Code changing

Biodiversity / Broader Ecosystem Services

- Transparency to public
- Don't underestimate construction constituencies
- Don't be afraid of incremental change
- Curated, contextualized, relevant, value-driven, real world, large-scale data
- Connect with Janet Hammer's project at PSU to measure triple bottom line impact of economic development projects



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