(Re-)Constructing the Sustainable City: Toward A Green Affordable Housing Model for Los Angeles

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PREFACE

The multiple meanings implicit in this paper's title – (Re-)Constructing the Sustainable City: Toward a Green Affordable Housing Model for Los Angeles – are perhaps easily understood (pun and all). I'd nonetheless like to devote a little space to making explicit what I mean by the title – and in particular, "(Re-)Constructing."

As many scholars are quick to point out, the city (whether defined as a political jurisdiction, a center of commerce, a collection of man-made structures, and/or a dense and diverse concentration of human capital) has arguably never been ecologically sustainable – that is to say, it has never been much concerned with sustaining the fragile human support systems on which it depends.[1] On the contrary, it has exploited, depleted, and polluted them post haste. Today more than ever, the city depends on resources mined and goods manufactured well outside its borders and then transported – by train, plane, boat and truck – inside. In this way disproportionately consuming the world's resources, cities (or more precisely, city-dwellers) also create the bulk of the world's waste – waste which is then expelled from these city to the periphery (whether the city's physical periphery or Immanuel Wallerstein's notion of the global periphery). In many cases, in fact, this waste is often externalized to the same place from whence the original resources came.[2]

Though I grapple with the question, 'Is there such a thing as a sustainable city?' – or, for my purposes, 'Does a city have the potential to be considerably more sustainable?' – in Chapter 2, I want to acknowledge here and now that I do not believe there has heretofore existed a sustainable city in the strongest sense of the term. Given this, the "Re-Constructing" of the title refers not to the literal re-making of the sustainable city (since it has never been 'constructed' to start), but to my attempt to re-imagine the *concept* of the (potential) sustainable city. How, exactly, do I envision the sustainable city? To answer this I must first clarify what I mean by 'sustainable.' In Chapter 1, I trace the origins and evolution of the terms, 'sustainability,' and 'sustainable development' up through the emergence of the '3 E's' understanding of sustainability, so named for its balanced incorporation of ecological, economic, and (social) equity goals. It is the holistic nature of this 3 E's view of

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[1] These include climate, agriculture, forestry, and industry, and the myriad systems upon which these systems, in turn, depend.

[2] See recent news articles on American paper waste – mainly from boxes containing Chinese goods – being boated back to China to be recycled and re-sold to the American market (Barboza, David, "Blazing A Paper Trail," 1). Notably, though, this is almost sustainable when compared to the situation of the developed world's electronic waste being disposed of in the underdeveloped world landfills – or melted down to its composite parts, introducing untold threats to human health, (Carroll, Chris, "High-Tech Trash," 1-8).

sustainability that makes it, for me, the most meaningful and compelling approach to sustainability in existence today.

After providing a brief background of affordable housing in the Introduction, I examine in Chapter 3 the concept and practice of so-called 'green' affordable housing in order to demonstrate how it is easily situated within this 3 E's framework, at once satisfying goals of increased social, economic, and environmental sustainability. My intention here is not only to demonstrate that green affordable housing is, at its core, concerned with producing a more holistic sustainability, but to propose that the city (or, for my purposes, the metropolitan region) that is – to borrow the term of Kent Portney, author of *Taking Sustainable Cities Seriously* – 'serious' about becoming more sustainable would do no less than embrace a robust model of green affordable housing.

Based on this belief, Chapters 4 and 5 lay out the current landscape of green affordable housing in Los Angeles County, focusing on, in turn, recent advances in and persisting barriers to the movement to make green building the 'standard practice' of the region's affordable housing development. With the aim of understanding how we, as green affordable housing advocates, may help to bring about a more green and affordable – and in a word, sustainable – city, Chapter 6 advances specific recommendations to the various members of the Los Angeles green affordable housing community as to how each may advance the goals of the movement. And finally, Conclusions briefly imagines the future of sustainability projects in Los Angeles.

INTRODUCTION

Personal Background

My own introduction to the world of affordable housing came two years ago in the form of a summer internship with a Los Angeles tenants' rights organization called the Coalition for Economic Survival (CES). This great opportunity – and what turned out to be an admittedly powerful experience for me – was provided through Occidental College's Urban and Environmental Policy Department and funded by grants from the Washington Mutual Bank and Union Bank of California Foundations. That summer, the bulk of my work was devoted to halting the displacement of tenants and permanent loss of rent-controlled apartments due to the sharp increase in condo conversions and demolitions. Though California's Ellis Act permits such activity to allow landlords to exit the rental business, at the time, landlords had seemingly turned en masse to conversions and demolitions as a means to evict long-time tenants from rent-controlled apartments in order to create for-sale luxury dwellings. To alert affected tenants to landlord plans and urge their help in passing a temporary citywide moratorium on conversions and demolitions, I canvassed with fellow organizers at rent-controlled buildings in the pipeline or at risk to be converted or demolished. We also responded to calls reporting illegal rent increases and evictions, code violations, and reductions of service, and helped to organize the hundreds of tenants of a notorious slumlord being prosecuted by the City Attorney's Office.

My experience that summer was a proverbially life-altering one. Canvassing, in particular, put a human face (indeed, hundreds of them) on the housing crisis, igniting in me a desire to be a part of the lifelong fight to help low- to middle-income residents secure and maintain safe and affordable housing in what is an increasingly out-of-reach housing market here in Los Angeles. Significantly, I also learned that the value of organizing is in empowering people to empower themselves, to fight for themselves, to represent themselves – all things which are inestimably more important, effective, and just than other, likely more privileged people trying to do it on their behalf.

That said, I do believe that there are roles that allies – in this case, affordable housing developers, policymakers, researchers, and other advocates – can and should, play in the two-pronged fight to maintain LA's existing affordable housing and to develop new, affordable – and, as I will discuss, green – housing in the region. However, before I can even begin to describe what green affordable housing is, why it's good, and how we might get more of it, I must provide a quick overview of affordable housing generally. A discussion of the state of affordable housing here in Los Angeles also follows.

What is Affordable Housing?

Affordable housing seeks to address the housing needs of low- to moderate-income families and individuals. What makes housing 'affordable'? Many standards hold that housing is affordable when no more than 30% of a household's pre-tax income is spent on rent or mortgage payments. A few consider up to 35% on specifically mortgage payments still within the range of affordability.[3] According to the U.S. Department of Housing and Urban Development (HUD), however, housing is affordable only if no more than 30% of income is spent on the monthly 'housing burden,' which includes rent or mortgage *and* utilities.[4] HUD and others employ the measure of Area Median Income (AMI) in order to calculate income brackets – and thus, the housing costs that would qualify as 'affordable' for each income bracket – by region. At the end of 2007, the AMI for Los Angeles County was $56,500 for a family of four, $51,000 for a family of three, $45,000 for a couple, and $40,000 for an individual.[5] As mentioned above, affordable housing may accommodate the very lowest-income households and those of a more moderate income alike (where 120% AMI is the threshold for 'moderate-income,' 80% AMI the threshold for 'low-income,' 50% AMI for 'very low-income,' and 30% AMI for 'extremely low-income'). As Beth Steckler and Adam Garcia, authors of "Affordability Matters: A Look at Housing Construction & Affordability in Los Angeles" affirm, "People usually talk about rents as being affordable below 30%, 50% or 80% AMI. People usually talk about home prices being affordable below 80% or 120% AMI."[6]

Affordable Housing in Los Angeles

How well does the supply of affordable housing meet the demand in Los Angeles? Not very: Currently, more than 1 in 5 LA County households pay at least *50%* of their income on housing.[7] Today, low- and moderate-income families and individuals who seek affordable, safe, and healthy housing in Los Angeles face a particularly daunting state of affairs, stemming from the County's abiding housing crisis and lack of robust protections for low-income residents. That only 14% of LA County residents could afford the 2005 median home price (which topped a cool half million) speaks to the scope of the current housing crisis.[8] Non-rent-controlled apartments boast similarly exorbitant

[3] Global Green USA. "Blueprint for Greening Affordable Housing," 199.
[4] Global Green USA, "Blueprint for Greening Affordable Housing," 178.
[5] Steckler, Beth and Adam Garcia, "Affordability Matters: A Look at Housing Construction & Affordability in Los Angeles," 14.
[6] Ibid.
[7] Los Angeles County Department of Regional Planning, "Los Angeles County Housing Element Update: Community Meeting," 16.
[8] California Economic Development Partnership, "California: Los Angeles County," 1.

and ever-increasing rents: Between 2002 and 2006 alone, non-rent controlled rents in Los Angeles County swelled by 22%.[9] During this same period, the aging stock of apartments under the Rent Stabilization Ordinance shrank monthly by landlords leaving the rental business and subdividing or demolishing their rent-controlled units in order to convert them to market-rate condos with impunity. There hasn't been new Section 8 housing construction in decades (such that the waiting period for Section 8 is now nearly a decade long) – to say nothing of the lost plight of public housing. Further, there is no new local housing bond to pick up the slack: Recent City initiatives to fund the production of 1,000 affordable units each year for ten years have failed each time they have reached the ballot, the latest one – in 2006 – receiving just less than 4 percentage points short of the 2/3 majority required.[10] Finally, with the steady flows of people and investment being redirected en masse to the inner city after a half-century of suburbanization, virtually no LA neighborhood has been left untouched; even the poorest are gentrifying, leaving no place for longtime residents, once displaced, to go as rents double, even triple. And these are but the main dilemmas complicating the provision of affordable housing in Los Angeles.

What We Need

Hand in hand with protection of the County's existing stock of affordable housing, then, the development of new, safe and affordable housing opportunities for low- to middle-income residents remains a critical battleground in Los Angeles. Such development has the potential to play an important role in improving the quality of life of thousands of families, seniors, and disabled persons each year. And, as we shall see, affordable housing promises to do even more for residents when situated within a theoretical framework of '3 E's' sustainability: By incorporating 'green' features into both affordable new build and the renovation of older affordable housing, so-called 'green affordable housing' has the potential to enhance not only individual quality of life, but to transform the prevailing 'life' of entire communities and urban centers into something palpably more sustainable and humane.

[9] Los Angeles County Department of Regional Planning, "Los Angeles County Housing Element Update: Community Meeting," 17.
[10] Smart Voter. "Measure H: Affordable Housing General Obligation Bonds, City of Los Angeles," 1.

I. WHAT DO WE MEAN BY SUSTAINABILITY?

The challenge for sustainability in the developed world is how to reduce our ecological footprint… while satisfying the economic aspirations and sociocultural needs of society.
– William E. Rees, "Achieving Sustainability: Reform or Transformation?"

Sustainability: Older than You or Me or Any of Us

Certainly, sustainability is not a remotely new idea. Historically, many cultures have emphasized the value of – to borrow an Aboriginal phrase – 'touching the earth lightly.'[11] A great many more have simply practiced what, in effect, can be considered a 'sustainable' way of life: Brenda and Robert Vale, some of the first scholars to write about a Green Architecture – in their book of the same name – cite the examples of the Bedouin and the Netsilik Inuit.[12] And yet, sustainable practices are by no means restricted to disappearing nomadic cultures (who, I think, can be viewed as practicing an ideal type of sustainability). Exasperated by the notion that sustainability is something new and/or the singular domain of white liberals, Lance Williams, Executive Director of the Los Angeles Chapter of the U.S. Green Building Council (USGBC) reasons that, "You can't teach poor people, whether in Manila or South Central [Los Angeles]…to be green [sustainable]. They've been doing it for years."[13] Here, he observes that socioeconomic status is strongly correlated with consumption and waste generation and thus, with sustainability or its lack thereof. Though the reputation of cities as hubs of resource use and waste generation is certainly legitimate, David Satterthwaite, author of "Sustainable Cities or Cities that Contribute to Sustainable Development?" reminds us that it is the affluent within cities that are disproportionately responsible for these burdens.[14]

The Conceptual Roots of Sustainability and Sustainable Development

Today, when the term 'sustainability' is invoked, it is generally grounded in an environmental or ecological understanding of the word, and in this understanding alone; indeed, this is the way in which I have employed the word in the previous paragraph. This is not surprising given

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[11] Vale, Brenda and Robert, "Principles of Green Architecture," 191.
[12] Ibid.
[13] Global Green USA, Enterprise Community Partners, and SCANPH, "Envisioning the Future of Green Affordable Housing." Strategic Planning Session.
[14] Satterthwaite, David, "Sustainable Cities or Cites that Contribute to Sustainable Development?" 1688. Though I will shy away from making consumption-curbing prescriptions here, l will note that I think this privileged group includes myself and likely anyone reading this paper.

that the conceptual basis of sustainability can be traced back to what Charles Kidd identifies as at least six different (if related) schools of thought relating to the biophysical world: "the 'ecological/carrying capacity' root, the 'natural resource/environment' root, the 'biosphere,' root, the 'critique-of-technology root,' and the 'ecodevelopment' root."[15] Though each root prioritized various environmental needs in slightly different ways, common to nearly all was the idea of ecological carrying capacity, that is, the idea that "the earth's resources and environment have a finite ability to sustain or carry life, particularly animal life."[16] Because humans are depleting natural resources much faster than they can be renewed, thereby contributing to the ever-diminished carrying capacity of the earth, human activity – at least "as currently practiced" Kent Portney points out – may be thought of as patently unsustainable.[17] Ecological sustainability, then, has traditionally urged the modification of human individual and collective behavior so as not to exceed the carrying capacity of the earth.[18]

Over time and in order to add to discussions taking place on international economic development, scholars began to articulate a new type of sustainability: 'sustainable development.' In this way, early theories of sustainable development united the ecological goals of sustainability with the economic goals of development. Such a conceptual move in turn spurred the articulation of numerous other sustainabilities: a 'social sustainability,' a 'political sustainability,' a 'cultural sustainability,' and so on.[19] Importantly, each new theory favored its own view of sustainability over the last and none really considered the possibility of a more inclusive sustainability.

The Origins of the '3 E's' Perspective

The first appearance of a definition of sustainability or sustainable development that merged ecological, economic, and social objectives came in the form of the Brundtland Commission's oft-cited 1987 report, *Our Common Future* (Officially the World Commission on Economic Development, the Commission took on the name of its Chair and former Norwegian Prime Minister, Gro Harlem Brundtland).[20] *Our Common Future* intentionally painted sustainable development with a broad brush, defining it as "development that meets the needs of the present without compromising

[15] Portney, Kent, "Taking Sustainable Cities Seriously: A Comparative Analysis of Twenty-Three U.S. Cities," 4.
[16] Ibid.
[17] Portney, Kent, 5.
[18] Ibid.
[19] See the 1992 Rio Earth Summit's proceedings for a sustainability that stressed livability and quality of life.
[20] Officially the World Commission on Economic Development, the Commission took on the name of its Chair and former Norwegian Prime Minister, Gro Harlem Brundtland.

the ability of future generations to meet their own needs."[21] As Satterthwaite recalls, "what [made] the Brundtland Commission's statement so important" at the time was that its visionary "insistence that [the] meeting [of] human [economic, social, cultural, health, and political] needs must be combined with ecological sustainability"[22]

Drawing on this multi-faceted understanding of sustainability, but distilling in particular the powerful triumvirate of environmental, economic and social goals, the "three-legged stool" or "3 E's" (for Ecology, Economy, Equity) model of sustainability soon emerged. Various visual models now exist to describe 3 E's sustainability (See Appendix A for three distinct representations), but common to all is the idea that true sustainability cannot exist without attention to each of the "three competing interests within civil society: economic development, environmental protection and social equity."[23]

[21] World Commission on Economic Development, *Our Common Future*, 8.
[22] Satterthwaite, David, 1680.
[23] Moore, Steven, A., *Alternative Routes to the Sustainable City: Austin, Curitiba, and Frankfurt*, 17.

II. THE SUSTAINABLE CITY: IMPOSSIBLE DREAM OR ATTAINABLE GOAL?

Cities are not self-sufficient and it is difficult to imagine a way to make them so.
– Kent Portney, *Taking Sustainability Seriously: A Comparative Analysis of 23 U.S. Cities*

Cites: Inherently Unsustainable?

Is there such a thing as a sustainable city? Numerous critics – leading sustainability scholars all – have argued that there is not. Citing examples both ancient and contemporary, they find that without exception cities account for a disproportionate share of the world's resource use. [24] In the U.S., in particular, we can trace the roots – and continued economic vitality – of the American city directly back to Harvey Molotch's idea of the fundamentally exploitative 'growth machine.'[25] For its part, even as the Brundtland Commission espouses the potential for sustainable development in cities and communities, the Commission acknowledges the undeniable connection between urban growth and elevated rates of consumption and waste. Cities, it reports, are responsible for "a high share of the world's resource use, energy consumption, and environmental [degradation],"[26] Attesting to cities' energy consumption in particular, Herbert Girardet, an urban ecologist, highlights that not only is "the bulk of the world's energy consumption…*within* cities," but that "much of the rest is used for producing and transporting goods and people *to* and *from* cities."[27] Consistent with other scholars writing on cities, Girardet makes the point that present-day cities differ greatly from those even a century ago in that they are more linked to one another by communications, capital, and global transport, and are significantly more numerous, more populous, and more consumptive.[28]

While he's certainly right on all of these counts, Girardet neglects to address the implications of one key point: For the first time in history, more people now reside in cities than outside of them.[29] If we write off cities as wholly unworkable when it comes to sustainability projects, we write off the majority of the world's people, not to mention the collective source of the overwhelming majority of the earth's ecological, economic, and social problems. Due to the combination of natural increases and continued rural-urban migration flows, many cities – and

[24] LINC Housing Corporation, "Episode 17: Green Building and Affordable Housing."
[25] Portney, Kent, 14.
[26] WCED, 241.
[27] Girardet, Herbert, *The Metabolism of the Cities*, 130.
[28] Girardet, Herbert, "Sustainable Cities: A Contradiction in Terms?" 413.
[29] LINC Housing Corporation, "Episode 17: Green Building and Affordable Housing." Rabinovitch, Jonas and Josef Letiman, "Urban Planning in Curitiba," 237.

certainly the world's mega-cities – will only continue to see unprecedented growth, presenting as yet unimaginable challenges to the provision of health, housing, food, education, etc. The material point, then, is that existing problems due to unsustainable patterns of consumption and waste generation are not going away any time soon; on the contrary, they will only become more grave. *Our Common World* seems to reflect this fundamental understanding. As Portney puts it,

> Certainly, the Brundtland Commission asserts that urban sustainability is important in industrialized nations if for no other reason than because cities are the places where large and growing proportions of the environmental and social problems reside [or originate].[30]

In other words, it is precisely the city's patent lack of sustainability that makes it the logical place in which to grow a renewable activism or, in Steven A. Moore's terms, in which to establish a 'regime of sustainability.'[31] For his part, Moore, a planner-architect who writes about the pursuit of the sustainable city in *Alternative Routes to the Sustainable City: Austin, Curitiba, and Frankfurt,* acknowledges that the sustainable city may ultimately "prove…a utopian project"[32] And yet he implies that in order to make any progress at all in addressing the fundamental problems of our time, we must invest ourselves fully in sustainability's pursuit. The pursuit of the sustainable city, then, is not simply admirable or well-intentioned, but necessary, urgent.

A Sustainable City Definition?

Importantly, there does not appear to be one, agreed-upon definition of the sustainable city in existence. Each scholar interested in sustainable cities seems to have developed his or her own definition to suit his or her own theoretical needs. Clearly referencing the Brundtland model of sustainability, Girardet considers the sustainable city one

> "that works so that all its citizens are able to meet their own needs without endangering the well-being of the natural world or the living conditions of other people, now or in the future.[33]

With such a definition, it is little wonder that Girardet cannot point to one sustainable city in existence, nor even a city that may hope to be considered sustainable in the future. For Moore, meanwhile, the sustainable city is a city that "negotiate[es] a balance between the competing social interests that alternately promote economic development, environmental protection, and social

[30] Portney, Kent, 14.
[31] Moore, Steven A., 201
[32] Moore, Steven A., 196.
[33] Girardet, Herbert, "Sustainable Cities: A Contradiction in Terms?" 419.

equity."[34] In contrast to Girardet's definition, Moore's definition is exceedingly flexible, albeit very hard, if not impossible, to apply to real life – to real cities. Would we be able to recognize this balance if and when we see it? Or, more likely, might we be led to believe we see a balance that is not there?[35] For his part, Portney seems to avoid defining the sustainable city altogether, offering up a more workable concept in its place: 'the city that takes sustainability seriously.' For him, these 'cities that take sustainability seriously'

> use broad definitions that go well beyond concern for the physical environment or creating jobs. They pursue sustainability at many levels and integrate concern for economic development, the environment, and quality of life across all activities of city government. [36]

In other words, a 'city that takes sustainability seriously' is one that is working towards "some operational version" of sustainability – some operational version of 3 E's sustainability.[37] Though still somewhat vague, this definition offers us a markedly more practicable understanding of the sustainable city.

<u>But Can Cities Make a Difference?</u>

Some critics continue to object to the idea of the sustainable city on the basis that they feel truly holistic action cannot be pursued at such an intensely local scale. And, to be sure, cities are not the most logical political entities to undertake and effect concrete change on sustainability issues. On the one hand, the city's relatively small size and arbitrary boundaries, when contrasted with the unbounded nature of the environment, the mobility of international capital, and the inherent diversity and inequality of the urban milieu would seem to complicate considerably any efforts to minimize environmental degradation, maintain economic vitality, and achieve social equity, respectively. Specifically in terms of the environment, Portney notes that "Ecosystems rarely conform to the boundaries of cities" – or for that matter, to the boundaries of counties, states, nations, etc.[38] In an age of globalization, meanwhile, multinational corporations *by their nature* effortlessly traverse national boundaries – to say nothing of those of the municipal variety.[39] Lastly, it has been argued

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[34] Moore, Steven A., 17.
[35] Gunder, Michael, "Sustainability: Planning's Redemption of Curse?" 1-2.
[36] Portney, Kent, 2.
[37] Ibid.
[38] Portney, Kent, 12.
[39] Sassen, Saskia, "The Urban Impact of Economic Globalization," 230-240.
Furthermore, within regions, municipal 'bidding wars' to attract big business largely restrict urban economic gains, (Dreier, Peter, el al, *Place Matters: Metropolitics for the Twenty-First Century*, 210).

that in capitalist societies, cities are inherently places of social stratification and economic inequality.[40] Given all of this, then, we can begin to perceive that cities may not be in the best position to address a given environmental, economic, or equity-related problem.

However, for Portney, the fact that it is not other jurisdictional units, but largely "cities around the world, including many in the U.S.," that have developed programs "concerned with becoming [more] sustainable, that appear to be working toward reducing the size of their ecological footprint," seems to demonstrates that cities may indeed serve as a driver of sustainability projects. There are many reasons why this might be. Interestingly, the Brundtland Report, written well before most of the present-day U.S. sustainable city initiatives were even conceived, seems to prefigure the important role of local government in sustainability projects, declaring that "local authorities usually have the political power and credibility to [enact] initiatives and to...deploy resources in innovative ways reflecting unique local conditions."[41] Even Girardet effectively theorizes on prospects for urban sustainability, identifying the city's role as a nexus of learning and innovation: "Cities are nothing if not centres of knowledge" he says, "and today this also means knowledge of the world and our impact on it."[42]

A Regional Focus

While I ultimately agree with Portney that "it *is* possible to make significant strides toward creating healthy and livable places by focusing attention on small geographic areas," I acknowledge that it is nonetheless important to recognize the fact that cities generally exist within a metropolitan context – and this is certainly the case for Los Angeles.[43] The regional interconnectivity of urban-environmental problems and policies is one of the key reasons why, for the most part, this paper does not focus solely on the City of Los Angeles, but on the larger (if still abstractly bounded) jurisdiction of Los Angeles County. The largest county in the nation, L.A. County encompasses a staggering 88 distinct municipalities (to say nothing of its dozens of unincorporated areas), each of which has its own policies relating – directly or indirectly – to the development of green affordable housing. To be sure, the County's massive scale, myriad jurisdictions, and extreme diversity complicates analysis as well as precludes a thorough investigation of the local conditions of any one municipality that may aid or hinder green affordable housing development. At the same time, I think that a county-level

[40] Logan, John and Harvey Molotch, "The City as A Growth Machine," 97-105.
[41] WCED, 242.
[42] Girardet, Herbert, "Sustainable Cities: A Contradiction in Terms?" 424.
[43] Portney, Kent, 18, emphasis mine.

focus permits an invaluable ‘big picture’ look at the current state of and continued prospects for green affordable housing in the region. After a general overview of what green affordable housing is and what it hopes to achieve in the following chapter, I will take up my focus on Los Angeles in Chapter 4.

III. THE BENEFITS (& ELEMENTS) OF GREEN AFFORDABLE HOUSING

Words give expression to what is in our minds, as do buildings, but buildings must also interpret the material conditions of the world so as to solve real social and environmental problems.
– Steven A. Moore, *Alternative Routes to the Sustainable City: Austin, Curitiba, and Frankfurt*

Whether in the construction of new affordable housing or the in rehabilitation of older structures, incorporating green building practices into the design, construction, operation, and maintenance of affordable housing makes sense, benefiting tenants, communities, property owners, and the environment alike. In this chapter I illustrate how green affordable housing at once satisfies goals of greater social equity, economic vitality, and ecological health and thus may be situated within a framework of 3 E's sustainability.

SOCIAL EQUITY-BASED BENEFITS

In speaking of the benefits that green affordable housing affords low-income residents, Melinda Nichols, Board president of the Seattle-based Low Income Housing Institute asserts that,

> [S]mart, sustainable building practices can be brought to bear in providing housing to the neediest…[because] low-income families and individuals with special needs stand to gain the most from living in homes that are healthy, efficient and connected to opportunities and services.[44]

I examine these equity-based arguments for green affordable housing below.

Smaller Utility Bills, Greater Affordability

In the first place, because the vast majority of affordable housing residents pay their own utility bills, increased energy efficiency translates to lower utility bills for residents. Green buildings, which make use of energy efficiency strategies, have been shown to reduce utility bills by as much as 35%.[45] In this way, green affordable housing dramatically improves the long-term affordability of affordable housing. Currently, low-income households devote around 17% of income to paying monthly utility bills (up from 15% in 1997), making utilities the second highest household expense after rent or mortgage payments.[46] As a percentage of income, this is four times the amount the

[44] Cohen, Aubrey, "More Low-Income Housing Being Built Green," 1.
[45] Noonan, Patty and Jon Vogel, "High Performance Building and Alternative Housing," 129.
[46] Muto, Sheila, "A Nonprofit Developer Builds 'Green' Houses," 1. Rich, Motoko, "Green Gets Real," 1.

average, middle-income household spends on utilities.[47] Families significantly below the poverty line, meanwhile, have been shown to spend upwards of 19% of their income on utilities; in this way, utilities represent a significant financial burden. This burden is demonstrated by the fact that in some areas of the U.S. up to a quarter of evictions of low-income renters are due to inability to pay utility bills.[48] But regardless of one's relative financial situation, as the literature from Santa Monica-based Global Green USA's Greening Affordable Housing Initiative identifies,

> For families and individuals on limited budgets, even a relatively small reduction in monthly costs is significant. Money saved on utility bills becomes available for other household needs.[49]

It also bears mentioning that in Los Angeles – as with the rest of the nation – utility costs are rising sharply and are projected only to increase. The economic relief afforded by increased energy efficiency and reduced bills, then, cannot come too soon for the region's working families.

Elements of Green Affordable Housing #1: Energy Efficiency

In achieving its greater energy efficiency, green affordable developments might make use of any number of particular materials, technologies, passive environmental control strategies, and/or active energy generation systems. Relevant materials and technologies include EPA-certified Energy Star or other similarly energy-efficient appliances and light fixtures, heating and cooling systems, high R-value (i.e., more insulating) insulation, light-colored 'cool roofs,' and window glazing. Passive environmental control strategies can make use of building orientation, a narrow footprint, window placement, open floor plans and more, all in order to maximize natural daylighting and to take advantage of prevailing winds, thereby producing natural ventilation. Green affordable housing developments that employ active energy generation may rely on solar photovoltaic (PV) panels, gas- or wind-powered turbines, or combined-heat-and-power (CHP) generators (which can use gas, geothermal energy, or "even woodchips").[50] That said, the use of on-site energy generation in affordable housing development remains somewhat more limited due to the greater overhead costs still associated with these technologies.

Improved Indoor Air Quality and Health

Green affordable housing also enhances equity in its commitment to improve buildings' air quality. To achieve this better indoor air quality, green affordable housing places special emphasis on the mitigation of the harmful toxins present in many building materials and on the prevention of

[47] Strategic Energy Innovations, "Green Housing," 1.
[48] Global Green USA, "Zero Energy Affordable Housing," 1.
[49] Global Green USA, "Why 'Green' Affordable Housing," 1.
[50] Girardet, Herbert, *The Metabolism of Cities*, 130.

moisture build-up in homes.[51] These admittedly simple measures can have a dramatic impact on the health of low-income residents. Tony Proscio, author of the report, "Affordable Housing's Green Future: Building a Movement for Durable, Healthier, and More Efficient Housing," recounts that in the 1990s, advocates of housing, human services, and public health began to note that the poor quality of much low-income housing was "contribut[ing] to ill health[,] exposing residents to poisoning from lead-based paint and dust, or to respiratory risks from allergens, mold, and moisture."[52] Other sources find that apartment-dwellers on the whole are more likely to suffer the effects of bad air quality than homeowners simply due to the nature of multi-family housing, since "[a]partment units have less ventilation than houses, and renters have less individual control over their air quality."[53] Further, since low-income communities in urban areas are generally heavily impacted by outdoor air pollution, these communities possess high rates of asthma and other respiratory disease – conditions which are then exacerbated by the presence of toxic indoor air pollutants. This is certainly the case for Los Angeles: though the entire Metropolitan Region is a national leader in abysmal air quality, low-income communities of color situated beside the area's major freeways, other transit corridors, and around the ports of Los Angeles and Long Beach are the most health-impacted of all.[54] To be sure, the numerous sources of air pollution must be directly addressed in order to hope to reduce community impacts. But at the least, green affordable housing can seek to offset hopes to ensure healthy housing that will n aggravate residents' existing health conditions.

Elements of Green Affordable Housing #2: Indoor Air Quality

Chief among the contributors to indoor air pollution are volatile organic compounds, or VOCs, such as formaldehyde, perchloroethylene, acetone, toluene, and benzene. Emitted by most commonly used paints, carpets, insulation, glues, and fire retardants, VOCs have been linked to "ear, nose, and throat irritation, loss of coordination, and…damage to the liver and central nervous system."[55] Formaldehyde, a component of the particle-board and composite wood products used for most countertops and cabinets, can emit gas, or 'offgas,'

[51] For his part, William McDonough suggests that the total elimination of these toxins will likely continue to elude us, (McDonough, William, "Design, Ecology, Ethics, and the Making of Things," 185).
[52] Proscio, Tony, "Affordable Housing's Green Future: Building a Movement for Durable, Healthier, and More Efficient Housing," 3.
[53] Lewis, Judith, "Go Vertical, Go Green," 1.
[54] These communities possess extremely elevated rates of respiratory disease and mortality due to air pollution, (Jerrett Michael and Richard Burnett, et al, "Spatial Analysis of Air Pollution and Mortality in Los Angeles," 727-736).
[55] Global Green USA, "Building Materials," 1 and "Top 20 No or Low-Cost Green Strategies," 3.

for 10-15 years after installation. In addition to causing ear, nose, and throat irritation, skin rashes, headaches, nosebleeds, and nausea, the EPA considers formaldehyde a probable human carcinogen.[56] Green affoedable housing standards thus promote the use of low- or no-VOC paints, carpets, adhesives, and sealants, formaldehyde-free cabinets and countertops, and linoleum, tile, or sustainably harvested wood or bamboo flooring in place of vinyl.[57] While low- or no-VOC products are cost-competitive with their VOC-bearing counterparts, formaldehyde-free materials are generally more expensive. At the least, any formaldehyde-containing wood products should be sealed with a (no-VOC) primer to prevent noxious offgassing. Finally, to preclude mold growth and the related health risks to residents, green building standards require improved ventilation. This is often achieved through the installation of exhaust systems that expel combustion by-products to the outside, thereby reducing the likelihood of moisture build-up.[58]

Increased Access to Transit, Jobs, and Services

Since truly sustainable affordable housing works to integrate developments with the surrounding community and to link residents with jobs and services, both individuals and their larger communities win. Part of a nationwide 'Smart Growth' movement to create communities that are dense, mixed-income, transit-oriented, and pedestrian-friendly, green affordable housing of necessity places multi-family, infill development in close proximity to transit and basic amenities. Naturally, this type of planning reduces the amount low-income families are forced to spend on transportation, which, for families living at the poverty level, can be a staggering 40 cents of every dollar earned.[59] In this way, transportation, like utilities, represents a significant financial burden to working families – but one that can be mitigated by thoughtful site selection and planning. Furthermore, since green affordable housing advocates the types of green and socializing spaces that foster both a sense of community and a sense of security, green affordable housing has the potential to fundamentally strengthen the social fabric of communities.[60] For this reason, the Southern California Association of Nonprofit Housing (SCANPH)'s Green Building Guide for Affordable Housing Developers urges affordable housing developers to consider incorporating into their projects outdoor community areas, including community gardens, which "enhance community by fostering pride in the high quality of the building [and its landscaping]."[61]

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[56] Global Green USA, "Top 20 No or Low-Cost Green Strategies," 3.
[57] Huchet, Peggy, "Sustainable Affordable Housing," 140.
[58] Global Green USA, "Top 20 No or Low-Cost Green Strategies, 3.
[59] Muto, Sheila, 1.
[60] Stein, Jeannine, "A New Standard of Living," 1.
[61] SCANPH, "Green Building Guide for Affordable Housing Developers," 1.

Green affordable housing may also seek to cultivate a sense of community and the skills of residents by providing on-site resident services, such as child care centers, after-school and tutoring programs, ESL classes, and the like. In Los Angeles, nonprofit developers like the Los Angeles Community Design Center and LINC Housing Corporation place particular emphasis on these kind of community-enriching services. Ultimately, green affordable housing's attention both to residents' social and economic needs and their physical health derive from the same idea – the idea that, as Tony Proscio puts it, "the development of [all] homes…and communities can be a much greater contributor to the health and well-being of both…occupants and the wider society than they are now."[62]

Elements of Green Affordable Housing #3: Site Selection and Planning

To benefit both resident quality-of-life and the environment, only sites with easy access to jobs, services, and transit should be considered for green affordable housing development. This type of development, which places new projects in the context of existing infrastructure and often makes use of underutilized parcels in existing neighborhoods, is known as 'infill.' Sites that should be avoided, meanwhile, include those in close proximity to freeways or other transit corridors (since, out of the many types of air pollution, trains, trucks, vehicles, and other mobile sources of air pollution have been shown to have the most serious health impacts on human health).[63]

In addition to helping to conserve energy, thoughtful site planning can enhance the overall livability of buildings and communities. For example, designing for natural daylight not only improves energy efficiency, but resident comfort as well. Green affordable design and landscaping may incorporate communal spaces, such as courtyards or gardens, as well as amenities like bike storage.

Finally, site planning has the ability to help regulate local and regional environmental conditions. Grading the site to direct water to permeable surfaces can reduce stormwater runoff and thus, pollution. Carefully calculating the building's massing and planning its design, meanwhile, can minimize negative microclimate effects, such as the urban heat island effect.[64]

ECONOMIC BENEFITS

Because green development stresses materials that are very durable and energy-efficient technologies that will offer a return on investment, property owners – which, in the case of the vast

[62] Proscio, Tony, 4.
[63] Sadd, Jim.
[64] Global Green USA, "Blueprint for Greening Affordable Housing, 29.

majority of affordable housing are developers themselves – reap the benefits of fewer life-cycle costs in building operation, liability and maintenance.[65] Additionally, green affordable housing property owners benefit from the increased valuation attributed to green projects.

Greater Durability

In his introduction to the 2005 Global Green USA report, "Making Affordable Housing More Affordable: Advancing Tax Credit Incentives for Green Building and Healthier Communities," then-California State Treasurer Phil Angelides raises the important idea that the affordable housing that we are building today is "a resource that will exist for many years to come."[66] Too often in the U.S. – and particularly in Los Angeles with its build-today-demolish-tomorrow mentality – buildings are thrown up with an absolute inattention to enduring construction and design.[67] But since affordable developments are intended to last so as to provide quality affordable housing 20, 30, 40 years down the line, building green is a surefire way to ensure that affordable developments are more durable and long-lasting than conventional construction and at least as easy to maintain.[68]

Increased Valuation

For its part, Global Green USA's Green Affordable Housing Initiative identifies the economic benefits of the 'value-added investment' that its sees as part and parcel of green development:

> Green building strategies add value through increased tenant satisfaction, improved marketability, reduced turnover, lower operating costs, and increased longevity. For owners, cost savings raise revenue and building valuation. When capitalized, the increased revenue can be leveraged for new development projects.[69]

This type of increased valuation argument is ostensibly a big selling point to the financial institutions and foundations that can help fund the development of green affordable housing. Perhaps the most compelling part of it for affordable housing advocates is that money saved over time on green affordable housing projects can then be put toward future projects, potentially creating a greater supply of affordable housing overall.

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[65] Green Affordable Housing Coalition, "Green Affordable Housing FAQs," 1.
[66] Global Green USA, "Making Affordable Housing Truly Affordable: Advancing the Tax Credit Incentives for Green Building and Healthier Communities," Foreword.
[67] See the news article the day the Staples Center opened: "Staples Center to be Demolished in 30 Years," (Los Angeles Now, dir. Philip Rodriguez).
[68] Noonan, Patty and Jon Vogel, 131.
[69] Global Green USA. "Why 'Green' Affordable Housing," 2.

ENVIRONMENTAL BENEFITS

Finally, like the green building movement before it, green affordable housing is fundamentally concerned with minimizing environmental impacts both near a given building site and away from it, based on the understanding that buildings consume much of the world's resources and generate much of its waste and emissions, but – through more smarter resource use and greater efficiency – could consume and pollute a lot less.

Reduced Resource Use, Waste Generation, and Pollution

Today, buildings are responsible for a sixth of the world's fresh water withdrawals, a fourth of its wood harvest, and two-fifths of its material and energy flows. In the U.S., in particular, buildings account for 36-40% of all energy use, 65-70% of electricity use, 25% of water use, 12% of potable water use, and 30% of all wood and raw material use.[70] These same buildings generate 48% of $C0^2$ emissions ($C0^2$ being the biggest contributor to greenhouse gases), and about half of all municipal waste.[71]

When compared with conventional construction, green buildings on average reduce energy use by about 35%, water use by 30-50%, $C0^2$ emissions by 40%, and waste generation by 70%.[72] The local and regional environment benefits from this reduced demand on infrastructure for energy and water and from reduced waste going to landfills. Green building's attention to reducing stormwater runoff also means local ecosystems experience less pollution and local communities less infrastructure damage. Naturally, the larger or global environment benefits from reduced resource consumption (especially of energy, lumber) and from reduced greenhouse gas emissions and other pollution. Thus, whether we consider environmental problems at a global scale (deforestation, climate change) or at a local one (Los Angeles' loss of habitats and open space and poor regional air quality), we can say that green affordable housing is fundamentally committed to preserving ecosystems (and indeed human systems).

[70] Global Green USA, "Green Building Resource Center: Why Build Green," 1. Moore, Michelle, "Green Buildings Matter," A11. Bardacke, Ted, "Green Affordable Housing," 3.
[71] Ibid.
[72] Moore, Michelle, A11.

Elements of Green Affordable Housing #4 & #5: Resources/Materials Conservation & Water Conservation

In addition to the use of smart site planning and the incorporation of energy-efficient strategies, green affordable housing can mitigate negative environmental impacts by minimizing and recycling building materials and construction waste and by conserving precious water. Where applicable, green affordable housing encourages the use of recycled-content materials, including drywall, insulation, carpet, plastics, and board. Where lumber is concerned, the use of reclaimed, engineered, sustainably-harvested, and locally-sourced lumber all seek to combat deforestation and pollution to varying degrees. So-called 'advanced framing' construction further reduces the need for new lumber.[73] Other construction materials, such as beams, windows, doors, and siding can be salvaged from other buildings. Fly-ash, a byproduct of burning coal typically disposed of in landfills, should be used to replace Portland cement (the industry standard) in concrete, as it requires less energy for production and less water for installation. Landscaping can easily employ compost as fertilizer. Finally, green affordable housing should provide a means for resident recycling.

Water conservation is also a key part of the fight to preserve natural resources. Low-flow or water-efficient appliances, such as clothes washers, dishwashers, toilets, faucets, and showerheads, can save an incredible volume of water, as can the use of greywater (wastewater not including sewage) or reclaimed rainwater in toilets. Water-efficient, low-maintenance landscaping that makes use of native, drought-tolerant plants can also significantly reduce water consumption. Where irrigation is still needed, capturing and storing rainwater and using drip irrigation can eliminate the wasting of expensive potable water on green space.[74]

[73] Global Green , "Blueprint for Greening Affordable Housing," 49.
[74] Huchet, Peggy, 139.

IV. RECENT ADVANCES IN GREEN AFFORDABLE HOUSING DEVELOPMENT

We are in the initial stages of this movement.
– Walker Wells, "Episode 17: Green Building and Affordable Housing,"
LINC Housing Corporation podcast

The past few years have seen significant strides in the development of green affordable housing in the U.S. – and in LA County, in particular. Though local green affordable housing advocates have been championing the issue for over a decade now,[75] Matthew Marin, author of "Incorporating Green Design Elements to Enhance Multifamily Communities" notes that among developers, green affordable housing "has been rapidly evolving from a niche topic [even] three to four years ago [to something more of the] mainstream" today.[76] Importantly, affordable housing developers are not only talking about 'going green,' but, in many parts of the country, actually transforming the way they do business. With respect to Los Angeles, in particular, the region's commitment to green affordable housing development in recent years can be attributed to three key factors: first, greater incentives, second, new policy mandates, and finally, the very nature of not-for-profit development. I examine incentives, policies, and nonprofits below.

INCENTIVES

Espousing the value of market-based incentives for green development (e.g., fast-track permitting, density bonuses), Michelle Moore, Vice President of the U.S. Green Building Council, reasons that they "don't add cost to government budgets, [yet] provide [compelling incentives] to developers."[77] Her point certainly has merit with regard to the for-profit sector (and particularly in light of the sweeping budget deficits produced by the current economic downturn). However, when it comes to affordable housing, which is funded through collaboration between government agencies, financial institutions, and non-profit community development corporations, the most effective incentives for green development are directly tied to its financing. State allocation of low-income

[75] Most notably, Global Green USA kicked off its Green Affordable Housing Initiative in 1997.
[76] Marin, Matthew, "Incorporating Green Design Elements to Enhance Multifamily Communities," 1.
[77] Moore, Michelle, A11.

housing tax credits – the single biggest source of equity for affordable housing development, involved in the financing of nearly 80% of projects – offers a prime example.[78]

Low-Income Housing Tax Credits

Established by federal and state governments, Low-Income Housing Tax Credit (LIHTC) programs allow companies or investors seeking tax relief to purchase tax credits (which are superior to tax deductions in that they reduce tax dollar-for-dollar) from affordable housing developers who can put the equity toward funding their projects.[79] In the case of the federal LIHTC program, after the IRS distributes a limited number of tax credits to states based on population, it is entirely up to each individual state and its Tax Credit Allocation Committee (TCAC) to determine how it will, in turn, distribute the credits to developers (TCACs may also oversee the allocation of credits from a state's own LIHTC program: for example, California has a 4% program in addition to the federal 9% program).[80] Because developer access to the limited tax credits is competitive, many states can effectively envision the kind of development they want to see, writing these preferences for issuing tax credit dollars into their Qualified Application Plan (QAP). Proposed projects are awarded points based on how many and which of these qualifications (as some are more heavily weighted than others) they meet; naturally, the higher a project's point total, the more likely it is to secure tax credit funding.

While almost every state has some form of green building criteria included in its QAP, the number of points awarded to green development is generally so few that developers can easily forgo these points – and do – without affecting their total score. California's QAP, by contrast, maintains one of the most robust sets of green building criteria in the nation with green projects able to capture up to 8 points when applying for both federal and state tax credits.[81] Add to this the fierce competition among the state's nonprofit developers for funds and the result is that the majority of new affordable housing in California is incorporating some mix of green elements in order to qualify for much needed tax credits.[82] In this way, state incentives have played an undeniably integral role in driving green affordable housing development here in Los Angeles. Blayne Sutton-Wills, Member

[78] Global Green USA, "Blueprint for Greening Affordable Houisng," 173. California Energy Commission, "Options for Energy Efficiency in Existing Buildings," 35.
[79] U.S. Department of Energy, "The Energy Policy Act of 2005: What the Energy Bill Means to You," 1.
[80] California State Treasurer's Office, "California Tax Credit Allocation Committee: About CTCAC," 1.
[81] Global Green USA, "Making Affordable Housing Truly Affordable," 14, 15, 24. SCANPH, "Green Building Guide For Affordable Housing Developers," 1.
[82] Cepe, Pamela. Transcribed Interview with Suairis Hernandez.

Services Director at the Southern California Association of Non-Profit Housing (SCANPH) confirms this fact, citing that of SCANPH's 200-some developer members in Los Angeles, Orange, San Bernardino, Riverside, and Ventura Counties, the vast majority can be said to be building green, if to varying degrees. Because of TCAC, he says, "They're already doing it."[83]

Third Party/Foundational Funding

Sarah Lewontin, Executive Director of the Housing Resources Group, an affordable housing developer in Seattle, observes that nationwide, "green building has become more…accepted among funding groups in the past five years."[84] In fact, more and more, monies specifically designated for green affordable development, such as grants and subsidized loans, are becoming available from national and local foundations and financial institutions. National third party funders spearheading the greening of affordable housing have included Enterprise Community Partners (now in the fourth year of a five-year, $555 million nationwide 'Green Communities' initiative to build 8,500 new units of green affordable housing), NeighborWorks America, the Home Depot Foundation, and the Local Initiatives Support Corporation (LISC).

In 2007, Enterprise kicked off its first financial commitments to green affordable housing development in Los Angeles with the awarding of four $70,000 grants to four projects (Bronson Court, Seven Maples, Rittenhouse Square and Hyde Park) proposed by three developers (Los Angeles Housing Partnership, Rittenhouse Limited Partnership, and Enterprise Home Ownership).[85] However, few other resources have been made available from the aforementioned national organizations to help in the greening of the region's affordable projects. In February of this year, NeighborWorks America and the Home Depot Foundation announced the launch of their nationwide Green Initiative, but nothing in the way of concrete plans has been revealed since the announcement. And, while Angeleno developers may technically apply to LISC's Green Connection Loan Fund, it seems that most may be unaware of this opportunity since the Green Connection program is run exclusively out of LISC's Bay Area office (and, further, the technical assistance, training, policy support, and peer-to-peer network that the Green Connection offers green affordable developers do appear to be limited to Bay Area nonprofits).[86]

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[83] Sutton-Wills, Blayne. Interview.
[84] Cohen, Aubrey, 1.
[85] Enterprise Community Partners, "Building Green with Los Angeles: Enterprise and the City Award Grants to Developers," 1-2.
[86] Local Initiatives Support Corporation, Bay Area Chapter, "Green Connection," 1.

Rebates from Utility Companies and Water Agencies, Governmental Agencies

Utilities are another important source of incentives for green affordable housing. In LA County, local utilities, whether municipal (e.g., Los Angeles Department of Water and Power) or investor-owned (e.g., Southern California Edison and Southern California Gas Company) currently offer myriad rebates on energy- and water-efficient appliances and systems, renewable energy technology, and the like. A search of the Rebates, Incentives, and Services database of Flex Your Power, a statewide marketing and outreach campaign to save energy, reveals dozens of rebates across LA County zip codes involving building envelope materials and construction (insulation, windows and window treatments, weatherization), heating and cooling systems (air conditioners and fans, boilers, controls and thermostats, furnaces, heat pumps, water heaters, ducts, HVAC systems), basic appliances (washers and dryers, refrigerators and freezers, dishwashers, toilets, lighting), outdoor water systems and landscaping (irrigation systems, pool filtration pumps and motors), and renewable energy (solar photovoltaics, wind turbines, fuel cells).[87] Other types of green building services and financing, including project design assistance, installation of renewable energy, and energy audits of existing structures are available to affordable housing developers through the Energy Efficiency for Affordable Housing and the Affordable Housing Rehab programs administered by Southern California Edison, Southern California Gas, and the Heschong Mahone Group, a consulting firm specializing in energy efficiency.

Finally, the California Energy Commission and a number of municipal agencies have also worked to provide developers with rebates specifically on renewable energy systems (i.e., on solar, wind, and fuel cell technology).

POLICY MANDATES

In the past, government typically has shied away from particularly strong policies mandating greener development, preferring instead to 'lead by example,' say, through the green construction and renovation of public buildings. To be sure, this type of early governmental commitment to green building has undeniably positive effects on the industry. As Patty Noonan, the late Senior Vice President of the New York City Housing Partnership and Jon Vogel of the eco-development firm Jonathan Rose & Companies point out,

[87] Flex Your Power Efficiency Partnership, "Rebates, Incentives, and Services," 1.

> [T]hese programs are important because they raise the general level of awareness of green building and help to stimulate the demand for green materials and technology… ultimately lower[ing] the costs of implementation.[88]

These public green building programs also arguably create new jobs and fuel further innovation in green technology.[89] However, policies that seek to mandate green building practices in commercial and residential buildings (affordable housing, included) have the opportunity to play an even bigger role in promoting greener development and in producing still greater windfalls in new jobs, new technologies and lower costs associated with green technology. A few examples of these progressive policies already exist at the federal, state, and local level. Though limited, such policy mandates are helping to pave the way (if only in the figurative sense, as paving eliminates permeable surfaces) to a future in which green affordable housing represents the norm.

Federal Policy

Though building codes are usually enacted at the local level, "[s]tate or federal government can, as public policy, pass legislation or develop programs that…supersede local codes."[90] One example of a building code policy enacted at the federal level is the low-flow toilet requirements mandated by the 1992 Energy Policy Act. After 1992, no new federal energy policy was enacted again until the 2005 Energy Policy Act which actually had little impact whatsoever on residential development, this despite the Department of Energy's express desire to make all buildings 'zero energy' in 20 years.[91]

However, the one way in which the 2005 Energy Policy Act does further the goals of green affordable housing is through its requirement that all public electric utilities offer net metering on request to customers.[92] Net metering permits owners of renewable energy-generating systems to be credited for the electricity they generate.[93] The state of California has had a net metering law on the books for over a decade now – and one that requires the participation of public and private utilities alike. Notably, the one utility that has been exempted from the law has been the Los Angeles Department of Water and Power (LADWP) (which, as the largest municipal utility in the nation,

[88] Noonan, Patty and Jon Vogel, 134.
[89] Moore, Michelle, A11.
[90] Eisenberg, David and Peter Yost, "Sustainability and Building Codes," 196.
[91] Wikipedia, "Energy Policy Act of 2005," 1.
[92] Ibid.
[93] Wikipedia, "Net Metering," 1.

serves nearly 4 million of LA County's 10 million-plus residents).[94] As a result, federally mandated net metering policy makes renewable energy generation a more financially viable possibility for affordable housing developers working in the City of Los Angeles.

State Policy

Yet, more than at the federal level, policies supporting greener residential building standards are being enacted at the state level. The two key examples are the most recent updates to Title 24, Part 6 of the California Code of Regulations, California's Energy Efficiency Standards for Buildings and California State Assembly Bill 32 (AB32), the California Global Warming Solutions Act of 2006.

Established in 1978 "in response to a legislative mandate to reduce California's energy consumption," Title 24 applies to both residential and non-residential buildings and is revised every few years to maintain ever-greater energy efficiency.[95] Some of the newest requirements for residential buildings in the 2005 standards mandate, among other things, high-efficiency (fluorescent) indoor and outdoor lighting, duct and pipe insulation (with the levels of insulation dependent on the climate zone), high-efficiency replacement windows, and third party field testing and verification to ensure quality installation.[96]

Meanwhile, AB32, also known as the California Climate Change bill, requires the reduction of greenhouse gases to below 1990 levels by 2020 (a reduction of 25%) and then an 80% reduction by 2050.[97] The draft plan on exactly how these goals are to be met is to be released in June by the California Air Resources Board (CARB). However, as municipalities are largely responsible for implementing state policy, it seems that many cities and developers already are anticipating a tightening up of building regulations due to both the AB32 draft plan and the new Title 24 requirements also coming out this year. Ostensibly, these state laws appear to be helping to spur cities and developers to 'go green': For their part, green building ordinance proponents in the City of Los Angeles have cited compliance with AB32 as a practical, legal reason for why the City needs the program – and needs it now. SCANPH's Green Building Guide for Affordable Housing Developers, meanwhile, cites "anticipat[ion] of the new Title 24 requirements as a reason why

[94] Database of State Incentives for Renewable Energy (DSIRE), "California – Net Metering," 1-2. Los Angeles Department of Water and Power, "About LADWP," 1. Wikipedia, "Los Angeles County," 1.
[95] California Energy Commission, "Title 24, Part 6 of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings," 1.
[96] California Energy Commission, "Most Significant Changes in the 2005 Building Energy Efficiency Standards," 2.
[97] California Air Resources Board, "Climate Change," 1.

nonprofit developers should consider green building. This local action to greening affordable housing is examined in more depth in the next section.

Local Policy

In many ways, policies mandating greener development – and greener affordable housing – have been strongest at the local level. Currently, various LA County cites maintain greener building regulations than are required by state law; for example, the City of Los Angeles requires transit-oriented development within Community Redevelopment Agency (CRA) project zones, Santa Monica maintains energy efficiency standards 10-15% above than those mandated by Title 24 for all new construction, and a good number of the region's cities mandate things like construction and demolition waste recycling and urban runoff mitigation.

Considerably fewer LA County Cities have sought to enact green building ordinances or programs; when they have, these ordinances have provided for green development to varying degrees, oftentimes limiting green building standards to public buildings (Long Beach, Los Angeles until recently) and/or providing financial incentives rather than strict mandates (Pasadena). By contrast, Santa Monica has maintained a very progressive Green Building Program that balances both mandates and financial incentives. On April 23, 2008, the City of Los Angeles passed its Green Building Ordinance, requiring all buildings of more than 50,000 ft^2 or 50 units to meet the intent of LEED certification and that all municipal buildings now meet the intent of LEED Silver.[98] Though the ordinance will not create much new pressure on affordable housing development given that most nonprofit developers of a certain size are already regularly incorporating green elements in their developments, the ordinance *will* likely provide indirect aid to these same developers, since the increased demand for green goods and services will help bring down costs, create new green jobs, and drive further innovations in green technology.[99]

NONPROFIT DEVELOPMENT

To be sure, when many people think of green buildings, what often comes to mind are high-tech commercial or upscale residential structures – and rarely affordable housing (The title of a

[98] Roosevelt, "On Earth Day, LA passes a 'Green' Law to Clear the Air,"1-2.
LEED is the US Green Building Council's Leadership in Energy and Environment Design program. The City settled on 'intent' (with the burden of proof laid squarely on the developer) based on the understanding that LEED certification can be very costly and time-consuming.
[99] Noonan, Patty and Jon Vogel, 134.

recent news article, "Green Housing Not Just for the Rich," presses this point).[100] However, as I hope to have shown, Angeleno nonprofit developers are actually ahead of their for-profit counterparts, incorporating green elements more of the time, if in less outwardly visible ways. And yet, the reason for this cannot be attributed solely to funding-related incentives (much less relatively weak policies). Leslie Hoffman, Executive Director of New York City's Earth Pledge Foundation states that

> In many ways, [non-profit] affordable housing is ahead of for-profit…because these groups are mission-based and really want to ensure that residents have the best housing for the long-term.[101]

As Hoffman identifies, it is precisely because affordable housing developers are concerned with housing durability, indoor air quality, and overall affordability that they are turning increasingly to green development, which promises improvements in all of these areas. The long-term ownership of most affordable housing additionally facilitates the greening of affordable housing. Unlike commercial developers who will own a building for perhaps a maximum of three years before selling it, nonprofit developers own their buildings for decades (15 years is the minimum ownership period for federal low-income tax credit eligibility) – and are thus more able to weather the higher 'first costs' of much green technology in order to see the payback (and after that, the return on investment) several years down the line.[102]

But, though affordable housing in Los Angeles may be accurately considered ahead of the (green) curve, green affordable housing is still far from the County's 'standard practice,' particularly if we focus only on those projects that meet an array of green criteria in all of the five categories that green affordable housing seeks to address, namely, site planning, energy efficiency and generation, water efficiency and conservation, resources/materials conservation, and indoor air quality. The following chapter considers the persisting barriers to the greening of all affordable housing in Los Angeles.

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[100] Gili, Enrique, "Green Housing Not Just for the Rich," 1.
[101] LINC Housing Corporation. "Episode 22: Green Roofs."
[102] LINC Housing Corporation. "Episode 17: Green Building and Affordable Housing."

V. BARRIERS TO THE MOVEMENT TO MAKE GREEN AFFORDABLE HOUSING STANDARD PRACTICE

The neighbors hated it.
–Tim Kohut, on NIMBY reception to LACDC's Three Courtyards,
a green affordable project in Van Nuys

Methods

In the following section, I present some of my original research on the persisting barriers to making sustainable affordable housing standard practice in Los Angeles at each of the four stages of design, funding/financing, construction/implementation, and operation/tracking. All of these barriers were raised at some point either at a green affordable housing strategic planning session I attended in February 2008 and/or during interviews I conducted in March 2008. Some of the findings are corroborated by existing literature where applicable.

The strategic planning session, "Envisioning the Future of Green Affordable Housing," was hosted by Global Green USA, Enterprise Community Partners, and the Southern California Association of Non-Profit Housing (SCANPH) at the California Endowment just north of downtown Los Angeles on February 28, 2008. In attendance were around 30 green affordable housing advocates and funders and affordable housing developers from around LA County, and in one case, Ventura. Over the course of the conference, I took notes on the various discussions taking place and those specifically pertaining to barriers are discussed below.

On March 4, 2008, I conducted an interview with Blayne Sutton-Wills, Member Services Director and resident green affordable housing policy expert at SCANPH, a member organization that, among other things, provides technical assistance to and policy advocacy on behalf of Southern California's affordable housing developers. The interview was conducted at SCANPH's office in Koreatown, Los Angeles. Sutton-Wills referred me to Tim Kohut, Director of Architecture and LEED AP at the community development corporation, Los Angeles Community Design Center (LACDC). I interviewed Tim Kohut on March 18, 2008 at LACDC's downtown Los Angeles office. The Los Angeles Community Design Center is unique among affordable housing developers in Los Angeles in that it has a LEED-certified architect – Kohut – on staff, reflecting their special commitment to embedding green building practices into all of their affordable housing design. In this sense, LA Community Design Center truly stands out as a 3 E's leader in affordable housing development.

DESIGN

BUILDING CODES & OTHER REGULATORY REQUIREMENTS

In many countries, building code adoption may occur at the national level; in the U.S., codes are adopted chiefly at the local level (and to a much lesser degree, at the county and state levels).[103] And across the U.S., myriad municipal building codes – many originally enacted to protect "human health, safety, and welfare" – effectively undermine the efforts of sustainable building construction and maintenance, prohibiting, for example, greywater recycling or rainwater harvesting, which could easily supply water to toilets or irrigation to landscaping, respectively.[104] Los Angeles County building codes are no exception. In fact, some codes are arguably becoming *less* sustainable as time goes on: Just this year, the City's Housing Department (LAHD) mandated the installation of air conditioning in all new units.[105] Such a sweeping requirement poses a significant setback to the goals of sustainability, negating the use of systems that can employ site planning, building design, materials, energy-efficient cooling systems and natural ventilation to great success. This is just one example of the way the current regulatory system irresponsibly – if unintentionally – "ignore[s] the role it plays in encouraging the depletion of natural resources and the demise of natural systems upon which everyone's health, safety, and survival ultimately depend."[106]

Across Los Angeles County, another key regulatory requirement that poses a significant challenge to the development of sustainable and affordable housing is minimum parking standards. On the one hand, as I've discussed previously, green affordable housing seeks to place development by transit nodes so as to best serve the needs of residents – many of whom may not be able to afford a car and already rely on public transit – and to best serve the environment through reduced fossil fuel consumption and emissions. At the same time, however, cities continue to levy what amounts to a 'policy tax' on affordable residential development, requiring that all new projects provide at least a certain amount of new parking; typically, this translates to the creation of multiple parking spaces per new unit. Based on the assumption that most households have at least one car in need of parking, these regulations were intended to be exceedingly practical. However, that they are uniformly applied to all new developments without regard for the type of housing that is being constructed makes them less so.

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[103] Eisenberg, David and Peter Yost, 193.
[104] Eisenberg, David and Peter Yost, 191.
[105] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.
[106] Eisenberg, David and Peter Yost, 197.

To be sure, the City of Los Angeles may be said to be "more forgiving" on this issue than adjacent cities in LA County because the City will generally allow one space/unit for senior housing, whereas most other cities will agree to nothing less than two.[107] But the City still has a ways to go. Currently, the nonprofit Los Angeles developer A Community of Friends is developing a new project to house its senior and special needs clients. Though the vast majority of these residents are unable to drive, the developer is nonetheless forced to make the case to the City about why it shouldn't need to provide the two spaces/unit mandated by the building's location in a CRA project area.[108]

It bears mentioning that such parking requirements often are not merely unnecessary, but exceedingly costly. Depending on land values and parking structure construction costs, developers may pay upwards of $10,000 per parking space.[109] For a development that is to be 50 units (as in the case of the aforementioned A Community of Friends project), parking adds up to a sizeable chunk of change – and space – that cannot be allocated to other needs, whether it is the creation of more units or the inclusion of green elements. For this reason, Tim Kohut asserts that "parking is the driver" of the LACDC's developments, and indeed, he concedes, it may sometimes be "a crippler:" Constrained to set aside precious space for parking, which cannot go underground due to prohibitive costs, LACDC can only imagine their projects so many different ways. As a result, the developer has utilized the same at-grade 'deck,' or 'podium' parking in a great many of their projects. Hart Village, completed last year in Canoga Park, conforms to this design.

NIMBY-ISM / COMMUNITY RESISTANCE TO GREEN STRATEGIES

Complicating any efforts to address minimum parking requirements, however, is the fact that parking in Los Angeles is not merely a policy issue, but a hugely political one. Because homeowners and businesses fear the loss of their street parking – if needlessly – the opposition from NIMBY (not-in-my-backyard) community members to reduced parking requirements for affordable developments can be fierce. For his part, Walker Wells, head of the Green Building Program at Global Green USA, confirms that any decrease in parking set-asides is "a political hard-sell."[110]

In addition to the parking issue, NIMBY-ism poses other challenges to the development of green affordable housing. In the late 1980s, affluent Angeleno homeowners, desirous of 'defending' their property values and the low-rise residential 'character' of their communities ('threatened' as

[107] Kohut, Tim. Interview.
[108] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.
[109] Livable Places, "Policy: Rethinking Parking Requirements," 1.
[110] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.

both were by more dense multi-family and commercial construction) allied with environmentalists to place strict limits on development. They couched their elitist, essentially anti-growth movement in the socially acceptable, environmental terms of 'Slow Growth.'[111] Today, these same slow-growth types continue to mobilize in protest of the more dense, slightly taller, and in some cases, mixed-use developments that the Smart Growth movement – and green affordable housing – promotes. By delaying permitting and construction timelines – sometimes slowing the production of much needed affordable units to a snail's pace – NIMBYs effectively impede the efforts of greener development.

FUNDING/FINANCING

COSTS & BUDGETARY CONSTRAINTS

Currently, the 'green premium' – or how much more it costs to build green, on average, compared to conventional construction – has been shown to be around 2-4%.[112] While commercial residential development can easily take on these added costs because they will simply pass them on to buyers, in affordable housing, by contrast, "development fees and the income levels of eligible purchasers or tenants are capped," making it "impossible for additional costs to be absorbed [by residents]."[113] In order to cover the slightly higher costs of green, then, developers must increase the 'funding gap' – or the differential that already exists between the total cost of development and rents or mortgages – and seek out still more funds from the complex matrix of affordable housing funding sources. While some of these additional funds may come in the form of equity, and thus do not have to be paid back, others funds may likely take the form of conventional long-term debt. In this way, says Blayne Sutton-Wills, taking on the extra first costs of green development (even if the green elements should pay the developer back over time) can be seen as "a little more treacherous" for affordable housing developers than for market-rate developers. After all, he points out, "4% more on a project that's $50 to $100 million is a lot [more money, a lot more debt]."[114]

In recent years, green affordable housing advocates like Global Green USA have worked hard to demonstrate that certain green elements can be 'cost-neutral' – or priced competitively with conventional materials or technologies – and that the process of 'value-engineering' – that is, cutting costs in some areas to allow additional expenditures in others – can help to green a project at no extra cost. The thinking seems to be that because they've carefully profiled the relevant demonstration

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[111] Fulton, William B., *The Reluctant Metropolis: The Politics of Urban Growth in Los Angeles*, 48.
[112] Pierce, Neal, "Sustainable Cities," A6.
[113] Noonan, Patty and Jon Vogel, 130.
[114] Sutton-Wills, Blayne. Interview.

projects in order to highlight the most cost-effective green strategies for developers, costs can no longer be seen as a barrier to green affordable housing development. This assumption really came out at the February 28 strategic planning session when small discuss the perceived barriers to green affordable housing. I noted that at no point in the discussion of one group – consisting entirely of Global Green and Enterprise staff – were costs identified as a possible barrier. By contrast, in another group made up solely of developers, costs were a central focus of the discussion. Presumably referring to the green premium, Oliver Baker, a developer at The Skid Row Housing Trust suggested that despite its potential benefits, green development typically results in a net loss of units that is simply not worth it: "If there's a question of building 32 units non-green vs. 12 units green, [as affordable housing developers], of course we're going to go with the 32."[115] Here, Baker articulates the perception among some developers that due to additional costs, building green may only be pursued at the expense of other key components of an affordable project, among them the total number of units that may be created. Others – generally developers who have already gone green – counter that there are additional funds available for green projects that can add to, rather than take away from, project budgets. Certainly, this issue remains subject to dispute.

INCENTIVES DIFFICULT TO LOCATE

Tim Kohut is one developer who disagrees with the idea that one needs to sacrifice a project's number of units in order to be green. However, this is probably unsurprising in that LACDC has been designing and financing green affordable housing for years, while developers like Baker and Vanessa Luna of The Skid Row Housing Trust don't have this experience – a fact which they readily admit and would like to remedy. To this end, Baker, Luna, and Matthew Valdez, a developer at Los Angeles Housing Partnership agreed that they could really use a list that puts down all in one place the incentives available to green affordable projects in Los Angeles. They wondered whether SCANPH might consider compiling this list. When the idea was brought up to him, Sutton-Wills' response was that the organization simply doesn't have the staff to do the work – but also that the creation of such a list would likely not be all that helpful, given that the incentives are changing all the time. In other words, any potential incentives list is "a moving target."[116]

On the other hand, Kohut does echo other developers' impression that there are "too many funding sources" to chase and still "not enough incentives" – or at least, enough incentives with a big

[115] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.
[116] Sutton-Wills, Blayne. Interview.

enough or quick enough return on investment.[117] Additionally, affordable housing developers may be hesitant to get involved with any incentives (that they may or may not know exist) because they have enough financing to line up as it is. As Noonan and Vogel highlight,

> Because affordable projects can have as many as 15 different sources of financing, developers are often leery of doing anything that they perceive as further complicating a project.[118]

In this way, green financing issues inevitably serve as an abiding barrier to the development of green affordable housing development in Los Angeles. Just what it will take to get most affordable housing developers – reluctant as they are to further complicate their already complex financing arrangements – over this hump to 'go green' remains to be seen. But, like Kohut, it's my sense that more substantive – and well-publicized – funding incentives must be identified and developed.

MANDATES NOT MATCHED BY FUNDS

As mentioned in Chapter 4, more and more mandates involving greener building standards are coming on the books, whether at the state (AB32, Title 24) or municipal (Santa Monica, Los Angeles) level. Unfortunately, some affordable housing developers say they are seeing something of an 'inverse relationship' between mandates and funding: As mandates are gaining strength and being enacted, funding is not increasing in kind, but in some cases, going down.[119] For those developers who already have the experience building and financing green, this may be less of an issue. However, in order to expect the remaining nonprofit developers inexperienced with green building to be able to adhere to new more cost-intensive mandates right away, public policymakers and financial organizations alike must be willing to allocate additional funds to green affordable development.

CONSTRUCTION/IMPLEMENTATION

BUILDING INDUSTRY NOT UP TO SPEED ON GREEN TECHNOLOGIES

One persisting barrier to the construction and implementation of green affordable housing is that many, if not most individuals working in the building industry lack the necessary experience with green requirements and technologies. As Jill Brooke, author of "The New Environment for Housing" explains, "Green building is still a new concept to many in the affordable housing industry,

[117] Kohut, Time. Interview.
[118] Noonan, Patty and Jon Vogel, 130.
[119] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.

[so]…one big obstacle can be finding [workers] to apply green technology,"[120] Many affordable housing developers looking to build green report that the lack of green experience in the construction trades.[121] Some cite that the number of LEED-certified or similarly trained professionals also remains in relatively short supply. Meanwhile, when City inspectors come across a green building, developers find that they're in many cases "not trained to know what they're checking."[122] At the same time, though, Kohut observes that the number of workers trained to install green technology has already seen a marked increase from just a few years ago: "When we began installing PV panels, few installers were out there." But now, he reports, "it's not a problem."[123]

OPERATION/TRACKING

INADEQUATE PERFORMANCE EVALUATION & DATA COLLECTION

Because many green technologies are relatively new, many still lack concrete performance data. The lack of substantive data quantifying the energy savings, health improvements, and economic returns of various green elements only complicates efforts to advocate for their inclusion in affordable housing projects. As Kohut states, officials and funders "demand empirical data." And without it, "they won't hear it."[124]

While the City of Los Angeles has only just enacted its A/C requirement, many neighboring cities have had similar laws on the books for years. Pasadena is one such city. While building their Orange Grove Gardens project in Pasadena a few years ago, LACDC worked hard to make the case to the City of Pasadena that the their design and materials for the project precluded the need for air conditioning. Following the delivery of LACDC's presentation, the housing officials in attendance agreed that the organization's arguments intuitively had made a lot of sense. However, feeling that there were not enough past models to look to, Pasadena officials ultimately refused to waive the requirement. Galvanized by the experience and others in which the nonprofit developer attempted to fight A/C requirements in other LA County cities to little success, LACDC undertook its own data collection on a select number of Orange Grove Gardens units that agreed not to have air conditioning, proving that, thanks to thoughtful design, these units could be just as cool as the air-conditioned ones and bolstering their theoretical arguments with hard figures for the A/C debacles to come. Certainly, though the developers who have the resources to undertake such performance

[120] Brooke, Jill, A10.
[121] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.
[122] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.
[123] Kohut, Tim. Interview.
[124] Ibid.

evaluation and data collection are certainly few and far between. Underlying this issue, then, is affordable housing's chronic shortage of discretionary funding and staff.

VI. TOWARD GREEN AFFORDABLE HOUSING AS STANDARD PRACTICE: SOME RECOMMENDATIONS

We cannot afford to not build green.
– Global Green USA, *Blueprint for Greening Affordable Housing*

In this final chapter, I propose a range of ideas for how the green affordable housing community might better meet its goals of making green affordable housing standard practice. I use the term, 'green affordable housing community' in the broadest possible sense to include any developers who currently are building affordable green projects or developers that are looking to do so, financial institutions and foundations who are funding green affordable housing or those that would like to, organizations that provide technical assistance to green affordable housing developers and, finally, anyone and everyone else interested in advancing green affordable housing development (or rehabilitation), whether through much needed policy change, message articulation and/or a grassroots organizing. Based on the observation that green affordable housing activism has proved strongest at the local level, my recommendations are, for the most part, directed at LA County-area developers, organizations, and individuals. The very end of the chapter undertakes specific policy recommendations with regard to energy policy.

RECOMMENDATIONS TO GREEN AFFORDABLE HOUSING ADVOCATES

ADRESSING 'GREEN FOG'

- **Advance a clear green affordable housing message and agenda.**

Some green affordable housing advocates – and green development advocates generally – have employed the concept of 'green fog' to describe persisting confusion about what, exactly, 'green' is.[125] There is clearly still a need for sustainability advocates to powerfully and clearly articulate their vision to the public. To be sure, part of the public's confusion may be due to the fact that so many people are talking about sustainability in so many different – and sometimes competing – ways. But, for their part at least, green affordable housing advocates can come together to spread the word about their particular brand of 3 E's sustainability and to demonstrate how green affordable housing fits neatly into this conceptual opening.

Among green affordable housing advocates, though, Blayne Sutton-Wills notes that there is "no common language," making it difficult to frame a single message and agenda. For example,

[125] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.

many environmentally-minded organizations and individuals (Global Green USA and Tim Kohut come to mind) employ economist William E. Rees' concept of an 'ecological footprint.' The 'ecological footprint' calculates a city or community's 'true' area after aggregating all the land on which the city or community depends for food, other resources, and for vegetation to absorb the emissions it produces.[126] Still other environmental organizations might prefer talk about the 'energy-intensity' of various goods, a measure calculated based on the energy expended in a good's "fabrication, transport, preparation for sale, sale, use, and disposal."[127] Meanwhile, others not as well versed in these environmental concepts, myself included, might only feel comfortable talking about energy use or pollution or none of these things all. For his part, Steven A. Moore argues that more sustainable systems are created not by employing a given conceptual model or language, but by identifying local opportunities and vocabularies around sustainability:

> Successful activists [in so-called sustainable cities] have not harangued fellow citizens with an alien vocabulary of 'alternative,' 'green,' 'regenerative,' or 'sustainable' choices, but…have… eroded barriers to coalition building by using vocabularies that are historically part of the local public talk.[128]

Fortunately, without relying too much on theory, organizations like Global Green have been pretty successful in framing green affordable housing in straightforward and accessible ways. And yet, a more concrete agenda on how to move green affordable housing forward in Los Angeles is needed.

APPROACHING POLICY CHANGE

- **Frame current policies as deleterious and unsustainable. Collect the necessary data. Draft code change and other policy change proposals.**

Whether in seeking to make building codes consistent with sustainable practices, to reduce or eliminate minimum parking requirements, or to achieve some other type of policy change altogether, making the case that our current regulations are – sometimes unintentionally – doing us more harm than good can be an effective tool in securing much needed policy change. As David Eisenberg and Peter Yost, authors of "Sustainability and the Building Codes" argue,

> A key to shifting the building regulatory system…requires developing awareness of the inherent risk in the status quo: what is likely to happen or is already happening if we maintain our current practices.[129]

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[126] Satterthwaite, David, 1677.
[127] Satterthwaite, David, 1678.
[128] Moore, Steven A., 196.
[129] Eisenberg, David and Peter Yost, 196.

Green affordable housing researchers and advocates, knowledgeable of the impacts of conventional building construction and operation on global, regional, and local environments and communities, are in precisely the position to develop this public awareness. Of course, winning policy change often requires time, money, and empirical data – assets which organizations may be short on. When asked if SCANPH would contest LAHD's new A/C requirement, Blayne Sutton-Wills points to many obstacles, among them time and money constraints and the complexity of the California Building Standards Code. Ultimately, he feels, "we can't fight them," though he personally hopes that the municipal green building group would talk to Department of Building and Safety or the Planning Department. But Sutton-Wills does note that while the A/C requirement reflects a policy decision, it can be thought of as "a numbers issue" in the sense that the emergence of hard data can and should stimulate changes in the policy – but this, he says, "will take time."[130]

Tim Kohut, for his part, doesn't want to wait on this data collection; he wants to drive it. Calling the A/C requirement "ludicrous" he argues that "It's up to us [as green affordable housing developers] to make the case, to gather and present the empirical data." Having gathered data on natural ventilation at their Orange Grove Gardens complex in Pasadena, Kohut says that LACDC "will start arguing with the City [of Los Angeles]" when they start their newest project there. Though nonprofits could always use more funds, the future of green affordable housing arguably depends on this type of aggressive data collection and policy advocacy.

Finally, it is imperative that the various constituent communities of the larger green affordable community (for example, environmental design, construction) themselves get involved in drafting code and other policy change proposals.[131] After all, if these groups aren't helping to craft this policy change, who will do it for them?

COALITION-BUILDING

- **Build and sustain a broad-based coalition to agitate for change.**

In terms of how to more effectively pursue policy change, Eisenberg and Yost propose that green affordable housing advocates need to go beyond fighting with city or county bureaucrats on a case-by-case basis, instead working to achieve "a proactive, constructive partnership with their building code [and other] officials."[132] Once erected, such a partnership ideally would take green affordable housing to the next level, above and beyond what advocates could ordinarily hope to

[130] Sutton-Wills, Blayne. Interview.
[131] Eisenberg, David and Peter Yost, 197.
[132] Ibid.

accomplish on their own. In Los Angeles, however, the prospects for such a partnership seem pretty dim. At various points in the past, the region's green affordable housing community has attempted to foster meaningful dialogue with officials like Mercedes Marquez, the General Manager of the LA City Housing Department – to little effect.[133] In any case, I would argue that a partnership of another kind – one forged between advocates and community stakeholders – has the potential to effect even more change than 'friends in high places.' Various sources agree, arguing that substantive partnerships that "bring…communities together to share information, embrace new technologies, and demand action" are nothing less than "the key to a more sustainable future."[134] For her part, Stephanie Taylor, Work Group Coordinator of Green LA, an environmental and environmental justice advocacy group, brings up the important point that green affordable advocates must also devote attention to what will happen with the coalition, once formed. At this point, she says, it is crucial that leaders work effectively to keep coalition members connected to each other and engaged with the larger movement.[135]

RECOMMENDATIONS TO DEVELOPERS WANTING TO GO GREEN

GO AT YOUR OWN PACE

- **Take an incremental or ad hoc approach. Employ value-engineering.**

To be sure, in affordable housing development – and in construction, generally – it is ill-advised to attempt to add on costly features on the fly or to 'fix as you go.' In fact, when it comes to green development in particular, it's been widely recognized that the cost of integrating green into a project increases exponentially over time.[136] However, it is my belief that affordable housing developers going green for the first time can benefit from an overall incremental approach to greening their developments. In other words, when tackling their first green projects, affordable housing developers can 'start out small,' utilizing value-engineering to take on the lowest risk green features and keep their budget in check. After all, says Blayne Sutton-Wills, it is "the low-cost strategies [that] give you the most benefit."[137] According to Sutton-Wills, some of the best low-cost, high-return elements are related to design – for example, building orientation and the inclusion of window

[133] Most recently, officials from LAHD, DBS, CRA, and some other LA City departments were invited to the February 28 strategic planning session – but all were conspicuously absent, save for one representative who had been at the CRA two months.
[134] Bay Area Alliance for Sustainable Communities, "E-perspective: Economy," 1.
[135] Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.
[136] Bardacke, Ted, 14.
[137] Sutton-Wills, Blayne. Interview.

setbacks (See Appendix B – Global Green USA's 'Top 25 in Low Cost Strategies' – for more of the best in low-cost strategies). Tim Kohut agrees. Describing Los Angeles Community Design Center's philosophy toward greening its projects, he states,

> We [first] try to design the most efficient [site orientation and] layout; then come the enhancements, such as awnings. If you run into problems, you can peel off your bells and whistles.

By contrast, when too many of these 'enhancements' are embedded in the design at the outset, a developer runs the risk of running out of money. Though conceptualizing green elements as 'bells and whistles' might distress those who object to value-engineering (on the basis that it may cut major green components in order to reduce costs), this is actually a highly pragmatic approach that takes into account not only budget realities, but the fact that unanticipated costs do crop up during construction. Accordingly, this kind of approach is great for the affordable housing developer just beginning to go green.

As developers amass more experience with green elements and funding mechanisms, they naturally become better prepared to undertake increasingly ambitious green projects that can address sustainability issues more fully. In this way, incrementalism and value-engineering emphasize flexibility and pragmatism rather than some rigid or dogmatic approach to greening – yet still work toward the same goals of increased sustainability. And, not insignificantly, this type of developmental perspective also seems to take into account the fact that green technologies – and even sustainability goals themselves – are constantly changing and evolving.

BEYOND BEST PRACTICES

- **Learn from others' missteps.**

Blayne Sutton-Wills raises the great point that compiling a list of best practices alone is a one-sided project; knowing the particular missteps taken by others, meanwhile, can help developers avoid the same fate. Based on this understanding, Sutton-Wills has been trying to have conversations with developers about "things that they've tried to do that have backfired." For example, though never mentioned in the glowing press on the project, the operation of Colorado Court, an SRO and affordable green demonstration project in Santa Monica that produces all of its own energy, has been rumored to have encountered operational setbacks. Solar panels haven't turned out to be as productive as everyone had hoped. Further, the City of Santa Monica invested in a micro-turbine to produce electricity, but since the micro-turbine's installation, the technology has changed so much

that the turbine was not easily fixed when it broke, nor is it even used anymore. Though the project was designed to give back to the grid, Sutton-Wills suspects that it doesn't.

As for LACDC's past problems, Kohut says that most have been budget-related. On one project, he says, the cost of concrete, copper, and other materials shot up, but, because of funding requirements, they were bound to move forward with development and ultimately had to re-design – i.e., pull things out of the design – as they went. In the case of another project, Harbor View Place, Kohut recalls that tens of thousands of dollars were lost because development stalled in order to fix some green features. In the end, he admits that Harbor View Place "suffered a lot through value-engineering," with many green elements scrapped by project's end. However, both experiences were undeniably instructive for Kohut and LACDC.

RECOMMENDATIONS TO GAH DEVELOPERS LOOKING TO IMPROVE

INTEGRATED DESIGN

- **Facilitate integrated design through early planning and if possible, the use of green charrettes.**

While incrementalism is a great tool for affordable housing developers new to green development, those who have more experience building green, yet continue to plan their projects through the conventional design process (whereby, as Sheila Greenlaw-Fink, executive director of the Oregon-based Community Partners for Affordable Housing, puts it, "architects [make] plans, contractors [build] them, and rarely [do] consultants and subcontractors come face to face") should consider the merits of a process of 'integrated design.' In contrast with the conventional design process, which is linear, Global Green USA identifies that

> The integrated [design] process is iterative, value and systems based, and focused on performance…The process starts at the planning stage…This is the time to address many fundamental green issues...before the site plan and unit…layout is determined.[138]

The benefits of considering the right mix of green elements before a site even has been selected are indeed numerous. In the fist place, "[i]dentifying green options early" allows developers the time to "check for consistency with the requirements of the expected local, state, and federal funding sources and to identify additional [funding] sources if needed.[139] In this way, integrated design focuses on managing costs, but – significantly – not at the cost of including important green features.

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[138] Global Green USA, "Blueprint for Greening Affordable Housing," 13.
[139] Global Green USA, "Blueprint for Greening Affordable Housing," 11.

Where possible, developers should look into a holding green charrette, or "collaboration-focused meeting" in order to best provide for integrated and cost-effective green design.[140] Those who should attend the charrette include the architect, project manager, structural engineer, civil engineer, mechanical engineer, HVAC designer, general contractor, landscape architect, construction manager, and a facilitator with green building expertise (whether one of the above or an outside figure).[141] The idea, then, is that a charrette is a space in which all of these people involved in the planning and construction of a building can come together and, aided by their different backgrounds and areas of expertise, explore all the "opportunities for green design…in a thorough, creative, and effective way."[142] Importantly, for Sheila Greenlaw-Fink, this collaboration doesn't end with the charrette: In the case of truly green building, she says, "you need the [entire] team [working together,] integrating design strategies from start to finish."[143]

COLLECTIVE BUY-IN

- **Educate residents about the buildings in which they live.**

Studies have found that people don't open their windows nearly as much as they're thought to.[144] Such a finding has clear implications for the relative success of natural ventilation systems in green affordable housing: Because some natural ventilation systems depend on air being able to flow in and out of units and common areas through windows, tenants who keep their windows closed most of the time significantly negate, if unintentionally, the effectiveness of this means of temperature control. Tenant education can help to address these and other problems that arise from the public's general lack of knowledge about the subtle ways in which green buildings may differ from conventional construction. In addition to informing residents about the buildings in which they live, this type of education programming can also help to meet LEED certification standards through the awarding of innovation credits, according to one of the architects of the Plaza Apartments, a green SRO in San Francisco.[145] Smaller developers who might not have the resources, particularly in staff,

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Refer to Global Green USA's "Blueprint for Greening Affordable Housing" for a more complete outline of the main components and benefits of the integrated design process.

[140] Global Green USA, "Blueprint for Greening Affordable Housing," 14.

[141] Global Green USA, "Blueprint for Greening Affordable Housing," 15. Kohut, Tim. Interview.

[142] Global Green USA, "Blueprint for Greening Affordable Housing," 17.

[143] Brooke, Jill, A10

[144] Kohut, Tim. Interview.

[145]Global Green USA, Enterprise Community Partners, SCANPH. Strategic Planning Session.

I have not discussed LEED standards much up 'til now because the certification process is fairly costly and time-consuming and thus, isn't a great fit for much affordable housing.

to administer such tenant education might consider looking into forming partnerships with tenant organizations that may be able to provide some assistance.

STAKEHOLDER PARTICIPATION

- **Cultivate citizen participation in design: Hold community forums.**

As Steven A. Moore points out, "Projects are likely to be considered successful by more people when experts depend on citizens to define them."[146] Though he is speaking about sustainability projects in general, this rule of thumb can be applied directly to those projects of the green affordable housing variety. Though building design and construction are arguably theoretically rigorous and technically complex, we must be critical of the repeated elevation of technocratic expertise above citizen-held knowledge. To be sure, this recommendation re-ignites the efficiency vs. inclusion debate all too familiar to the disciplines of planning and architecture. Moore, weighing in on the side of inclusion, reasons that, "Although time is…expended in the process, the inclusion of multiple perspectives in the design of artifacts and institutions renders them more satisfying" and just.[147] And yet, Moore also suggests that if the technocrat-citizen balance is right, we can have at once meaningful participation *and* effective design. Design, he argues, can actually be improved by "proliferating the means of thinking, not by relegating thinking to yet more experts."[148] Numerous other community-minded scholars concur. In order to better, in Moore's terms, proliferate the means of thinking, green affordable housing developers should consider holding a community forum during the planning stages of a new project. With the project architect on hand to hear, respond to, and incorporate community needs and ideas, the community forum could be a great tool on the one hand, to cultivate much needed public learning and inclusion, and on the other, to augment professional knowledge (about resident behavior and needs, for example).

COMMUNITY-ORIENTED DESIGN

- **Understand residents' behavior and design buildings accordingly.**

As mentioned earlier, sometimes the activities of residents seem to negate the use of certain green strategies, such as natural ventilation. However, sometimes tenant education is not necessarily the answer. For example, it has been shown that in many cases low-income residents do not open

[146] Moore, Steven A., 228.
[147] Moore, Steven A., 200
[148] Moore, Steven A., 207.

their windows due to security or safety concerns.[149] If this is the case, the use of natural ventilation strategies that rely on residents to open their windows would be a inappropriate. According to Tim Kohut, a good alternative to employing traditional natural ventilation is to make passive heating and cooling features "as automated as possible" by ducting air into units and including a fan and set of sensors in each unit.[150] Then, when a resident goes to turn on the fan, the system can asses whether it's cooler outside than indoors and if it is, simply open the flap to pull the outdoor air inside, thereby cooling the unit.[151] It is only by becoming intimately familiar with residents' needs that architects can design buildings that truly will serve their .

'VISIBLE GREEN'

- **Don't be afraid to show a building's 'green-ness.'**

Blayne Sutton-Wills, Walker Wells and others have posed the question, 'What is acceptable green?' That is, 'Do people need to see it (in, for example, the form of PV panels or a LEED certification)?' Although the consensus seems to be that green affordable housing shouldn't need to look a certain way, visibly green affordable housing projects do seem able to better counteract or mitigate much of the NIMBY hostility to affordable housing. Because of this fact, green affordable housing developers should not shy away from including the so-called "glamorous" green elements in their projects, if financing may be found. Speaking of LACDC's take on "big-ticket green," Tim Kohut says, "We don't like to be in your face, but we'll show it [the green features]." By way of explanation, he describes how LACDC often makes use of PV panels, but will not go so far as to install them vertically, launching a subtle jab at Colorado Court, a Santa Monica green affordable housing demonstration project that is covered in hundreds of (low-energy-capturing) vertical panels, many of which, Kohut notes, are obstructed from direct sunlight, shaded as they are by the palm tree landscaping.

RECOMMENDATIONS TO FOUNDATIONS AND FINANCIAL INSTITUTIONS

MONEY

- **Be willing to allocate more funds for green development.**

Foundations and financial institutions that currently are funding green affordable housing projects – as well as those that are looking to – need to be willing to set aside more funds for the

[149] Global Green USA, "Blueprint for Greening Affordable Housing," 31
[150] Kohut, Tim. Interview.
[151] Ibid.

development of green affordable housing. In many cases, it is only through the allocation of additional funds that affordable housing projects are able to truly green their projects. As Noonan Vogel assert,

> Even if a project is properly value-engineered…a truly green project will have additional upfront hard and soft costs over a traditionally designed project. At this point, financial incentives become important.[152]

Hard costs are those related to the building's physical construction site, such as costs of "land, building materials, the labor necessary to install those materials, site and landscape expenditures, contingency costs, furniture, fixtures, and equipment."[153] Soft costs, then, are those costs that are incurred away from the building site; these can include the consultant salaries, permitting and legal fees, financing and transaction costs, and insurance. Presumably understanding that going green remains financially difficult for many affordable housing developers, Global Green USA urges foundations to consider "[p]rovid[ing] supplemental funding for high priority [and] high cost [green] items" in light of the myriad environmental, economic, and social benefits that these items afford.[154]

METRICS

- **Undertake Performance Evaluation & Data Collection**

As has been mentioned earlier, more data collection is needed – and particularly with regard to the health and economic advantages of green affordable housing over conventional construction. Where there have been studies in the past that have demonstrated green affordable housing's various health benefits, larger and more numerous studies are still needed to press the point.[155] Additionally, says Jill Brooke, a remaining "frontier for green housing proponents is quantifying the bottom-line financial benefits with more precision that has been possible to date."[156] Global Green USA confirms the difficulty of pinning down data because "only some of the benefits of green affordable housing, such as utility savings, can be easily quantified."[157] Further, as mentioned earlier, local housing authorities and non-profits as a rule lack the expertise, time, and funds to take on this type of complex monitoring.

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[152] Noonan, Patty and Jon Vogel, 133.
[153] Global Green USA, "Blueprint for Greening Affordable Housing," 173.
[154] Global Green USA, "Blueprint for Greening Affordable Housing," 182.
[155] LINC Housing Corporation., "Episode 18: Foundations' Role in Green Building."
[156] Brooke, Jill, A11.
[157] Global Green USA, "Blueprint for Greening Affordable Housing," 171.

For this reason, foundations, furnished as they are with resources, must step up to the plate and undertake the necessary performance evaluation and data collection. Indeed, Enterprise Green Communities recently embarked on the long-term monitoring of various green elements' first costs vs. life-cycle costs, their rate of payback (i.e., the time in which a green product's operational savings pay for the additional first costs), and their return on investment (i.e., the total operational savings over a product's life).[158] As Brooke explains,

> Enterprise is capturing data from its Green Communities portfolio to make the case to mainstream financial institutions that green affordable developments are economically superior to conventional projects.[159]

But other organizations invested – in the various senses of the word –in green affordable housing (for example, Bay Area LISC, NeighborWorks America) need to take up the reins in tracking performance, as well.

RECOMMENDATIONS TO TECHNICAL ASSISTANCE ORGANIZATIONS

TRAINING

- **Hold Contractor Training Sessions**

As time goes by, construction workers' green building knowledge will undoubtedly continue to improve in Los Angeles, due in large part to the commitment of key local institutions like LA Trade-Tech, with offers an array of "career-technical programs that align with [the top] 17 industries in [LA's] Green Technology Sector."[160] In the meantime, though, technical assistance organizations like SCANPH are in a great position to help out with the much-needed training of workers in green technology. As Blayne Sutton-Wills points out, member organizations like SCANPH that have strong relationships with labor unions can put these ties to use – can, as it were "call on their friends in labor" – to set up joint green building training sessions for contractors, as well plumbers, pipefitters and carpenters.[161] In this way, these organizations can directly address the current mismatch between the still-limited supply of workers with green building skills and the ever-growing demand for these workers, thereby helping to power the next phase of the green affordable housing revolution.

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[158] Bardacke, Ted, 13-17. Global Green USA, "Blueprint for Greening Affordable Housing," 174-175.
[159] Brooke, Jill, A11.
[160] Los Angeles Trade-Technical College, "Los Angeles Trade-Technical College A Leader in Workforce Development," 2.
[161] Sutton-Wills, Blayne. Interview.

Specific Energy Policy Recommendations to Advance Green Affordable Housing

1) Replace mandated master metering with opportunities for sub-metering, smart metering.

In all energy-consumptive buildings, meters are used to keep track of the energy supplied to (and more rarely, generated at) a building. Under the current system of master-metering (also called central systems metering), a single energy meter is used to keep track of the energy supplied to all of the units in a multi-family development. Only one other energy meter accounts for the energy supplied to the building's common areas, such as hallways. For a building that generates energy on-site, the master-metering system effectively prevents this renewable energy from being supplied to the building's units because, with a single meter for units, very expensive inverters would be needed in order to convert the electrical current for use in each unit. As a result, any energy generated at these buildings currently is used to light common areas alone. And, because it is developers who foot the bill for common area utilities, it is currently developers, not tenants, who see all of the economic benefits of on-site energy generation.[162]

Policy which supports sub-metering (or individual metering) can address this problem. In green buildings that generate their own energy, sub-metering allocates a separate meter to each unit, allowing residents to be billed for the energy they consume and credited for their portion of the energy generated on-site. The use of sub-metering may also be complemented by so-called 'smart metering' displays, which allow residents to view their energy consumption.[163] In this way, smart metering can facilitate a better understanding of energy use and encourage tenants' energy-saving – and consequently, money-saving – efforts.

2) Consider updating utility allowances for energy-efficient buildings. Or not.

But where developers may be the sole financial beneficiaries of implementing renewable energy technology, they are currently disincentivized from investing in other types of highly energy-efficient materials and technologies beyond those mandated by building codes. Argues the California Energy Commission:

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[162] Kohut, Tim. Interview.
[163] Western Governors' Association, "Building An Energy-Efficient Future: Policy Recommendations for Energy Efficient Buildings," 20-22.

> "Property owners that invest in higher energy efficiency upgrades are currently penalized in [that] utility allowances for more efficient properties are the same as for conventional properties [meaning that] owners are not able to charge higher rents."[164]

Set by local public housing authorities (PHAs), utility allowance schedules approximate residents' monthly energy use.[165] And, because affordable housing maintains that the monthly housing burden be no more than 30% of household income, developers must thus deduct the utility allowance from the household's maximum housing burden in order to arrive at the maximum affordable rent that they may charge that household. However, some green affordable developers complain that the current utility allowances do not take into account the increased energy-efficiency (and lower energy costs) of their buildings, wrongfully disallowing them from charging higher rents and recovering their investment costs. As Global Green USA explains,

> because older, less efficient buildings dominate the sample [of affordable units on which PHAs base their utility allowances], utility allowances rarely reflect actual utility costs in newer, energy-efficient buildings, and developers are unable to capture the cost savings of up-front investments in energy efficiency,"[166]

Global Green USA, the California Energy Commission, and developers like Tim Kohut alike urge updates to utility allowances that would take into account resident energy savings and thereby allow developers to set higher rents that still remain within the range of affordability.

But while this type of utility allowance adjustment may indeed encourage more developers to implement more energy-efficient strategies, raising residents' rents by the same amount by which energy efficiency is lowering their utility bills negates pretty much all of the economic benefits that green affordable housing currently provides tenants. Thus, it is my belief that if a new utility allowance schedule is to be created for energy efficient buildings, it should reflect some kind of compromise – with residents able to retain most of the energy savings and developers able to see slightly higher rents.

3) Reform net metering.

By way of explaining California's net metering policy, Tim Kohut says, "If you generate 200 kilowatts, but only use 100, you're not credited the balance."[167] Though California's net metering system is stronger than that of most states (for example, allowing month-to-month rollover of user-

[164] California Energy Commission, 36.
[165] Global Green USA, "Blueprint for Greening Affordable Housing," 178.
[166] Ibid.
[167] Kohut, Tim. Interview.

generated energy credits), it nonetheless retains one major flaw: All energy credits expire at the end of the year. Unlike states like Colorado and New Jersey which pay producers of excess energy annually, in California, the owner of a renewable energy system that generates more energy than it needs over the course of a year is not only "billed zero and [does] not make any money," but is not credited this energy for future use.[168] Utilities effectively claim this excess energy, which they then sell it other electricity consumers – or even, plausibly, to the same user whose system generated the excess energy, should his or her system not produce enough energy to meet future energy loads.

Though most affordable housing developments are still far from being able to supply all of their own energy (with Colorado Court being the chief exception to the rule in the LA County area), Tim Kohut asserts that this is where the future of green affordable housing lies. However, in order for such a goal to be financially viable for developers, California net metering policy must be reformed such that not only do credits not expire, but utility companies are forced to purchase annually the excess renewable energy generated at buildings that produce more energy than they use. The revenue provided by such a policy would offer financial support to green affordable housing developers already invested in renewable energy. Additionally, though, it would provide incentives for all other affordable housing developers to begin considering the possibilities of on-site energy generation.

[168] Wikipedia. "Net Metering."

CONCLUSIONS

Beyond green buildings, we're pushing for centers of green living.[169]
– Tim Kohut

In *Alternative Routes to the Sustainable City,* Steven A. Moore finds that there is no single path to the sustainable city. Ultimately, he says, "[E]ach city [moving towards sustainability] must make its own way" – its own path – building on local opportunities for sustainability.[170] What path will this be for Los Angeles? What are our particular opportunities? In Los Angeles – as in cities nationwide – a movement is taking root. It is a movement to fundamentally transform the physical and social fabric of the city into something palpably more sustainable and humane. In fact, it is a movement that is just beginning to comprehend what Brenda and Robert Vale meant nearly two decades ago when they said, "The city is far more than a collection of buildings;…it can be seen as a set of interacting systems – systems for living, working, and playing – crystallized into built forms."[171]

With this paper I hope to have shown that green affordable housing has the potential to be the leading edge of this new wave of sustainable city activism. Though I also hope to have offered some concrete ways in which this work might be advanced in Los Angeles, I recognize that, as Walker Wells puts it, "We are [only] in the initial stages of this movement [to green affordable housing],"and thus, that specific conditions and consequent plans of action will continue to change and evolve.[172] But while my recommendations will eventually become outdated, I don't believe a healthy scrutiny of the built environment ever will. After all, it is only through this process of continuously re-envisioning and reinventing the built environment that we can, in Brenda and Robert Vale's terms, hope to "find the face of the [more sustainable] city of tomorrow."[173]

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[169] Kohut, Tim. Interview.
[170] Moore, Steven A., 24.
[171] Vale, Brenda and Robert, 192.
[172] LINC Housing Corporation. "Episode 17: Green Building and Affordable Housing."
[173] Ibid.

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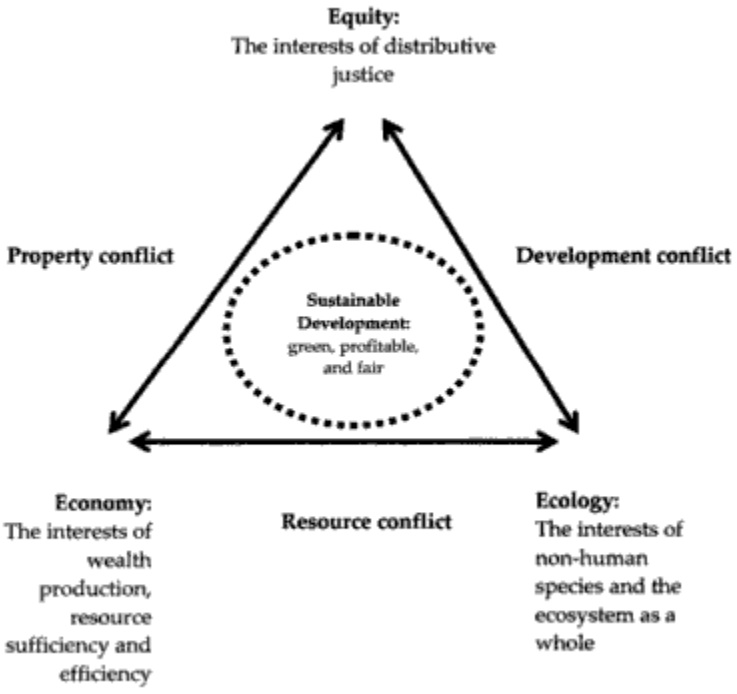
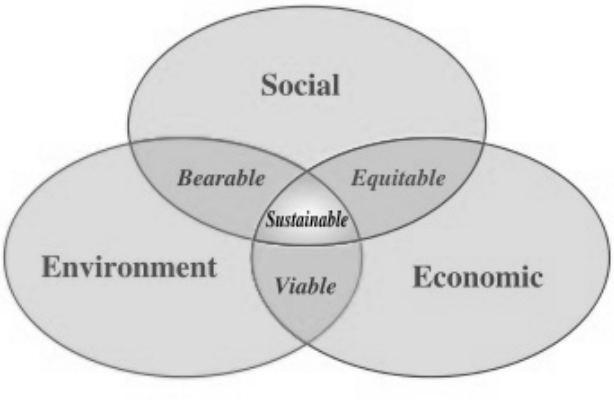
APPENDIX A

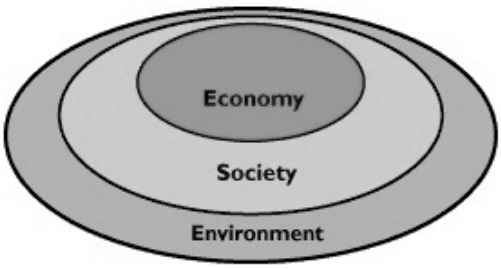
Three Views of 3 E's Sustainability: Triangulated Model, Venn Diagram, Nested Circles



Source: Steven A. Moore, *Alternative Routes to the Sustainable City: Austin, Curitiba, and Frankfurt*.



Source: Gunder, Michael, "Sustainability: Planning's Redemption or Curse?"



Source: Sustainable Measures, "A Better View of Sustainable Community."

APPENDIX B

Global Green USA's 'Top 25' in Low Cost Green Strategies

TOP 25 LOW COST GREEN BUILDING PRACTICES

1. Locate close to transit and services
2. Reduce parking and provide secure bicycle storage
3. Design for natural ventilation and passive heating and cooling
4. Design for natural daylight
5. HVAC sizing
6. Permeable surfaces on site
7. Trees to shade east and west elevation
8. Low-water use plants
9. Flyash or slagash in concrete
10. Advanced framing (OVE)
11. Light-colored roof
12. Seal all plumbing and electrical penetrations
13. Proper flashing around windows and doors
14. ENERGY STAR® ceiling fans in living room and bedrooms
15. Timer delay or humidistat on bathroom fan
16. Formaldehyde-free insulation
17. ENERGY STAR or pin-type fluorescent lighting
18. ENERGY STAR appliances
19. Low-water use plumbing fixtures
20. Recycled-content insulation, carpet, drywall, etc.
21. Formaldehyde-free cabinets or fully sealed cabinets and counters
22. Low-VOC paint
23. CRI carpet
24. Carbon monoxide detector
25. Provide owners or tenants with information on green features

Source: Global Green USA, "Blueprint for Greening Affordable Housing."