

underWRITING:
The Harvard Student Journal of Real Estate

Volume 01 | Fall 2010 / Winter 2011

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underWRITING: The Harvard Student Journal of Real Estate is published annually by the Harvard Student Real Estate Consortium (HSREC) with the support of the Harvard Real Estate Academic Initiative (REAI) and the Harvard Graduate School of Design Real Estate Development Club (GSD RED Club).

underWRITING: The Harvard Student Journal of Real Estate is printed by an online publication website, Lulu. Information on the publisher can be found on their website, www.lulu.com. Copies of the Journal will be available for purchase by the public directly from the publisher.

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Printed in the United States of America
Date of issue: Fall 2010 / Winter 2011
ISBN: 978-1-4583-7653-4

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A Letter from the Editors-in-Chief

Dear Readers,

We, the Co-Editors-In-Chief, are excited to present the first volume of *underWRITING: The Harvard Student Journal of Real Estate*, which is managed, written, and edited by Harvard graduate students committed to the real estate field. *underWRITING* is an annual publication dedicated to documenting contemporary academic discourse on real estate and provoking dialogue among the diverse disciplines in which urban, economic, political, legal, and spatial issues intersect. For this initial volume, submissions were solicited from students at Harvard's graduate schools. Work produced during the 2010 calendar year or 2009 - 2010 academic year was eligible for submission.

When *underWRITING* was conceived a little over a year ago, the intention was to put Real Estate Studies and activities at Harvard on the map. Each of the University's schools has a cohort of dedicated Real Estate students who produce thought-provoking scholarship. In the past there were few outlets to showcase this work and share it with the broader real estate community. Therefore, our mission from the outset has been to establish the Journal as a platform for the work of graduate students from across the University involved in the study, discourse, and practice of real estate. This inaugural volume is the first step in that direction. We hope that over the next few years, the Journal will continue to grow and further our founding mission.

The Journal is divided into sections highlighting current topics of interest to the real estate industry, namely: Housing Policy; Sustainability; and New Frontiers in Real Estate Development. In addition, we have included a section entitled, "A Year of Success," which is a tribute to all the real estate competitions in which Harvard teams placed or won. Furthermore, we thought it would be a refreshing addition, particularly during these rough economic times, to feature recently-graduated students who were active developers during their studies. Each of these talented entrepreneurs took time to come back to school during the lull in the market. We hope you will find this Q&A section enlightening from both academic and practitioners' perspectives. Also included is a list of all Real Estate-related courses offered at the various Harvard faculties during the 2009 - 2010 academic year. Liberal cross-registration opportunities throughout the University enable students to reap the benefits of a well-rounded Real Estate education during their tenures. In addition to the Harvard courses listed, students are also welcome and encouraged to cross-register at MIT, particularly for courses offered at the Center for Real Estate (MIT CRE) or in the Department of Urban Studies and Planning.

In closing, we would like to express our gratitude to the people and organizations that made this Journal possible. *underWRITING* has been a collaborative effort from its inception and would not have been possible without the care, attention, and support of the following contributors. Most importantly, we would like to acknowledge the hard work of the Founding Editors — Ian Klein and Elli Lobach — in conceiving the Journal, soliciting submissions, and providing editorial assistance. The Journal would not have been possible without the encouragement and generous support of Professor Richard Peiser and the Harvard Real Estate Academic Initiative (REAL). Their contributions were invaluable in bringing *underWRITING* to press. We also thank the Harvard Graduate School of Design Real Estate Development Club (GSD RED Club) for its donation, which helped fund the project. Moreover, many of the editors came from the GSD MDesS Real Estate program; without their dedication and tireless man-hours designing and editing the Journal, this vision would not have come to fruition.

To contact the editors, or find out more information, please e-mail us at underWRITING.Harvard@gmail.com. Additionally, we will be launching a web page for the Journal, which will be accessible through the Harvard Student Real Estate Consortium (HSREC), REAL, and GSD RED Club web sites. We hope that you enjoy reading *underWRITING* as much as we enjoyed working on it!

Sincerely,
Arianna Sacks '11 and Ignacio Correa '11
Co-Editors-In-Chief

A Word From The Faculty



Richard Peiser is the Michael D. Spear Professor of Real Estate Development at the Harvard Graduate School of Design and Director of the Real Estate Academic Initiative (REAL) at Harvard University.

These are turbulent times in the real estate industry. Those of us who thought the S&L Crisis of the late 1980s-early 1990s was our generation's Great Depression have been forced to revise our view of recessions in the wake of the sub-prime mortgage crisis and the subsequent financial meltdown of 2008-2010. Against this economic backdrop, however, enormously exciting trends are shaping the future of urban development around the world – rapid urbanization in many countries, notably China, India, and Brazil, globalization of finance, green buildings and sustainability, public-private development, regulation, technology, and design innovation. The Harvard Student Real Estate Journal presents a terrific new forum to feature research on these trends by Harvard students.

Five schools at Harvard have students engaged in studying real estate and urban development– the Graduate School of Design, the Business School, the Kennedy School, the Law School, and the College (Faculty of Arts and Sciences). The Real Estate Academic Initiative at Harvard (REAL) was launched in 2003 to bring faculty and students in these schools together. The REAL is an Interfaculty Initiative under the Office of the Provost, whose mission is to support research and education in real estate and related fields dealing with the urban environment. It was formed in recognition of the fact no single school at Harvard covers all aspects of real estate – that faculty and students are investigating important questions in many parts of the university, and that both a forum and a research funding vehicle were needed to help further the multiple disciplines engaged in real estate-related research.

Through its International Advisory Board and Alumni Advisory Board, and under the direction of a Faculty Steering Committee, the REAL provides funding for research by faculty and doctoral students as well as for graduate and undergraduate theses. It supports a broad range of topics that concern real estate's relationship to the built environment and the socio-economic impacts of urban development.

The Business School, Design School, and Kennedy School of Government have had real estate clubs for a number of years. The REAL assisted students interested in real estate to form new clubs in the College and the Law School. The Harvard Student Real Estate Consortium (HSREC), an officially recognized university-wide student organization founded by members representing all of the Harvard real estate clubs, was formed in 2006 to serve as an umbrella organization to unite students interested in real estate throughout Harvard. It helps to coordinate and promote the multitude of lectures, presentations, and other activities sponsored by each of the five real estate clubs on campus.

Every center and interfaculty initiative at Harvard has a host school and the GSD serves that function for the REAL. Students at GSD go into real estate from several programs including planning, architecture, and urban design. There are real estate concentrations within the MDes and MUP programs that encompass real estate development, finance, economics, design, regulation, and policy. Indeed, GSD students have had unique success this past year winning major competitions – finalists in the ULI Gerald D. Hines Student Urban Design Competition, winners of the MIT Boston Open Real Estate Finance Case Competition and winners of the Federal Home Loan Bank of Boston Affordable Housing Development Competition.

When Ian Klein, Elli Lobach, and Naomi Lewis proposed establishing a new Harvard journal on real estate last year, I was delighted to see their initiative but warned them how difficult a task it would be to assemble high-quality articles, review them, edit them, and publish them in a timely manner. *underWRITING* is the fruition of their efforts. In keeping with the mission of the REAL, the inaugural issue is a compendium of articles on key current issues in real estate as well as a representative sample of work by students from different schools at Harvard. As with the academic programs, the journal links real estate scholarship to practice. It is a worthy beginning to what I hope will become an annual tradition, featuring Harvard students' engagement with the rapidly changing urban environment – an enormously challenging world for which they are uniquely prepared to contribute when they graduate. ■

Editor Biographies



NAME
Arianna Sacks
TITLE
Editor-in-Chief
SCHOOL
Harvard Graduate School of Design
DEGREE
MDesS
Real Estate
GRADUATION DATE
May 2011

Arianna Sacks is a second-year student at the Harvard Graduate School of Design. This May, she will be completing a Master's degree in Real Estate. Along with her role as Editor-in-Chief, she is also very active within the real estate community at Harvard. She is as President of the GSD Real Estate Development Club as well as President of the Harvard Student Real Estate Consortium (HSREC), the pan-university organization created to strengthen relationships among faculty, students, and alumni interested in real estate across the University. She is a recipient of the 2010 - 2011 HSREC Founders Award, given to students who show leadership in real estate.

Arianna comes to Harvard with a background in architecture and design. She obtained a Bachelor of Architecture degree from Cornell University in 2005, and worked with Rafael Viñoly in his Manhattan office before coming to Harvard. This past summer, Arianna had the opportunity to intern at the NYC Economic Development Corporation in the Real Estate Transactions Department, where she worked on development projects in the five boroughs and supported the team to better understand future development opportunities for the City of New York.



NAME
Ignacio Correa
TITLE
Editor-in-Chief
SCHOOL
Harvard Graduate School of Design
DEGREE
MDesS
Real Estate
GRADUATION DATE
May 2011

Ignacio Correa is a Master's Degree Candidate in Real Estate at Harvard University. He holds a Master in Urban Design from the University of Miami and a Bachelor of Architecture degree from the University of Mendoza in Argentina. Most recently, his Harvard team was one of four finalists among 138 teams from the U.S. and Canada in the 2010 ULI Gerald Hines Student Urban Design Competition.

Prior to Harvard, Ignacio worked for over 8 years at Canin & Associates, a 30-year-old architectural and planning firm in Central Florida. During his tenure, he became the youngest Principal in the history of the company. Ignacio led and implemented many architectural, urban projects, and charrettes across the US, Latin America, Europe, and the Middle East. Last summer, he interned for Samuels & Associates, a renowned real estate developer in the Boston area, where he was in charge of project sourcing, underwriting, acquisition, and asset repositioning of several projects.



NAME
Ian Michael Klein
TITLE
Founding Editor
SCHOOL
Harvard Graduate School of Design
DEGREE
Master of Architecture in Urban Design
GRADUATION DATE
May 2010

Ian Klein is a real estate development and investment professional with expertise in project conception, initiation, design, underwriting, positioning, and implementation. He has directed the development and construction of over 300,000 sq. ft. in New York City valued at over \$500 million. He has experience with large urban projects across most major asset classes. Ian has also directed a series of academic research initiatives combining real estate, architecture, and urbanism.

He received his professional degree in Architecture from Cornell University and the MAUD with distinction from Harvard University, combining real estate and urban studies curricula. He was also the recipient of the departmental award for outstanding leadership. While at Harvard, Ian was the Co-President of the Harvard GSD Real Estate Development Club, Co-Editor of PLATFORM 2, the 2009 annual publication of the Harvard GSD, Student Juror on the 2010 Harvard V.R. Green Prize Committee, and winner of the 2010 MIT Boston Open Real Estate Finance Case Competition. Ian currently works in the real estate group at the New York City Economic Development Corporation.



NAME
Elli Lobach
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Founding Editor
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DEGREE
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Real Estate & Project Management
GRADUATION DATE
May 2010

Elli is currently working as a Project Manager for the New York City Economic Development Corporation in its Real Estate Transaction Services division. While at Harvard, she was a winner of the 2010 MIT Boston Open Real Estate Finance Case Competition as well as a recipient of the HSREC Founders' Award and the GSD Alumni Association Unsung Hero Prize. Her background is in software development, and she earned a Bachelor's degree in electrical engineering and computer science from Harvard College. Previously, she worked as a summer intern with AvalonBay Communities in its Boston-based development group.



NAME
Kristen Hunter
TITLE
Senior Editor
SCHOOL
Harvard Graduate School of Design
DEGREE
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Real Estate & Project Management
GRADUATION DATE
May 2010

Kristen Hunter is an experienced real estate development manager and LEED Accredited Professional who has initiated, repositioned, and implemented infill residential and mixed-use projects in Boston's inner-city neighborhoods.

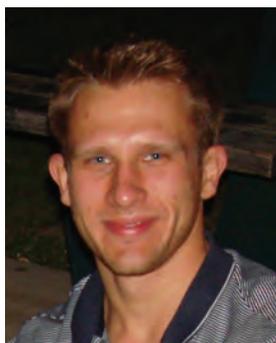
She completed her degree with distinction in May 2010, earning the Gerald M. McCue Medal for highest overall academic record, Ferdinand Colleredo-Mansfeld Prize for Superior Achievement in Real Estate Studies, and Harvard Student Real Estate Consortium Founders Award for outstanding commitment to the furtherance of real estate and urban development at Harvard. She served as Co-President of the GSD Real Estate Development Club, Alumni Advisor to the Student Community Center Foundation in their efforts to acquire and redevelop a historic facility, and was a member of the GSD team that won the inaugural MIT Boston Open Real Estate Finance Case Competition in April 2010.

Her research on redevelopment and land markets in Seoul, Korea was featured in Peter G. Rowe, *ed.*, *The Cheonggyecheon Restoration Project: A City and its Stream*, published by the GSD and the Seoul Development Institute.



NAME
Naomi Lewis
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Copy Editor
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Harvard Graduate School of Design
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MDesS
Real Estate & Project Management
GRADUATION DATE
May 2010

In December of 2009, Naomi completed the GSD's MDesS program with a focus on real estate development. While at the GSD, she served as the Social Chair of the GSD Real Estate Development Club. Naomi earned her Bachelor's degree in Landscape Architecture from Ball State University in 2008. Upon graduation from the GSD, she joined Buckwalter Commercial, a commercial real estate company in Bluffton, South Carolina, as the marketing and land planning consultant. She interned with this company in the summer of 2009 and wrote her scholarly paper on the sustainability initiatives the company is taking at its mixed-use development in Bluffton, SC.



NAME
Adam Virgadamo
TITLE
Copy Editor
SCHOOL
Harvard Law School
DEGREE
Juris Doctor
GRADUATION DATE
May 2011

Adam Virgadamo is a member of the class of 2011 at Harvard Law School and is the co-chair of the school's Real Estate Association. Prior to matriculating at HLS, Adam attended Harvard College, where he graduated with a degree in economics. While at Harvard College, Adam joined Broadway Realty Partners - a Boston area brokerage firm focused on rentals, sales and management - and has worked as the firm's manager since 2007.

Adam is enthusiastic about the value of interdisciplinary studies in the field of real estate and hopes to apply his studies one day to found his own development firm.

ULI GERALD D. HINES
STUDENT URBAN DESIGN
COMPETITION 2010

TEAM MEMBERS:

Macy Man-Sai Leung, MDesS 2011
Ignacio Correa, MDesS 2011
Fai Au, MDesS 2011
Phyllis Zhou, MLA 2010
Shane Campbell, MBA 2010

TEAM ADVISORS:

Professor Richard Peiser, Michael D.
Spear Professor of Real Estate and
Development
Brian Canin, Principal and Founder
of Canin & Associates

"If the ARTs be the root of East Village,
play on."

The ULI Gerald D. Hines Student Urban Design Competition, now in its ninth year, is one of the most prestigious graduate student development competitions in the nation. It offers graduate students the opportunity to form their own multi-disciplinary teams and engage in a challenging exercise in responsible land use. Student teams comprising at least three disciplines engage in a two-week intense collaborative effort to devise a comprehensive design and development program for a real, large-scale site replete with challenges and opportunities. Submissions consist of drawings, site plans, market data, and feasibility analysis.

The Competition is part of the ULI's ongoing effort to raise interest among young professionals in creating better communities, improving development patterns, and increasing awareness of the need for multi-disciplinary solutions to development and design challenges. It is an idea-based competition and there is no expectation that any of the submitted schemes will be applied to the site, or influence the broader real estate sector.

April 8th marked the end of the 2010



Harvard Finalist Team

Urban Land Institute (ULI) Gerald D. Hines Student Urban Design Competition in San Diego, California. Members from the GSD Real Estate Development Club, Macy Leung and Ignacio Correa, along with Harvard GSD students Fai Au, Phyllis Xue Zhou, and HBS student Shane Campbell, competed in the ULI national finals against students from the University of Pennsylvania, University of Maryland, and North Carolina State University/University of North Carolina at Chapel Hill (this year's winning team) for the national title and \$50,000, and \$10,000 for each finalist team.

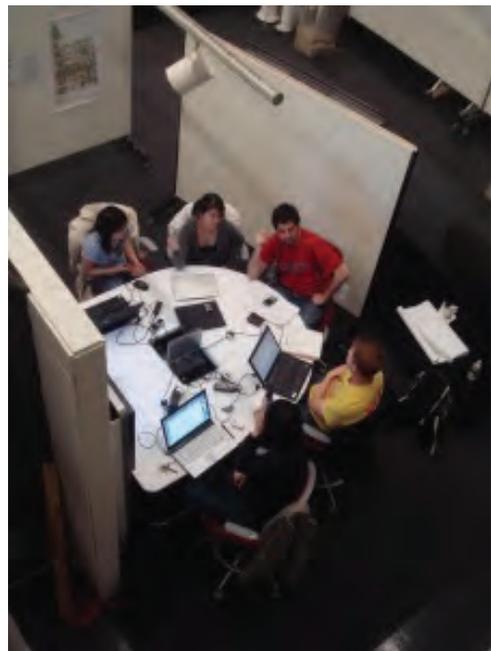
The competition began in January, with an initial phase of two weeks. The chosen site consisted of approximately 73 acres located in East Village, a distressed yet compelling neighborhood in San Diego. The neighborhood had a long-standing art tradition, remnants of a former industrial warehouse district, and is in close proximity to some of San Diego's main attractions, such as the Harbor, Balboa Park, and the Gaslamp Quarter.

While some schools, such as Harvard, MIT, and the University of Pennsylvania, originally had 10 - 20 individual team entries submitted per school, other institutions, such as University of Maryland, selected only one team for the competition. A total of 138 teams from across the U.S. and Canada competed in the initial round, following which four finalist teams were selected to advance to the final round presentations in San Diego from April 7 - 8, 2010.

Harvard's proposal for this year's competition was named "Celebration of Arts," which consisted of a mixed-use residential/retail development, a central art galleria, a man-made canal, and art-themed parks throughout the site. The proposed NEW ART DISTRICT in East Village aimed to be a synergetic project that would be attractive to people of all generations and backgrounds. Its layout

is unified by four art-themed sub-districts where art serves as the linkage across the site. The proposal appeals to different market segments and revitalizes the area through varied programmatic art initiatives across the project.

In addition, the 73-acre redevelopment scheme aimed to celebrate the North end of a trolley station on the site, Park Boulevard, and Broadway Street, and provide linkage from nearby parks and neighborhoods to the waterfront. As such, the catalytic development was envisioned to transform not only the East Village district, but also influence the rest of the region. ■



Team Harvard Working Session

A YEAR OF SUCCESS

Summary Proforma Team 1202

	Year 0 2018-11	Phase 1		Phase 2		Phase 3						
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Net Operating Income												
Market-rate	Rental Housing	\$0	\$3,914,736	\$8,064,356	\$12,459,430	\$17,110,950	\$22,030,348	\$27,229,511	\$32,720,795	\$38,517,050	\$44,631,632	
	For-Sale Housing	\$0	\$2,543,230	\$28,369,527	\$29,220,613	\$30,097,231	\$31,000,148	\$31,600,152	\$32,888,057	\$33,874,699	\$34,890,940	
Affordable	Rental Housing	\$0	\$176,163	\$362,896	\$560,674	\$769,993	\$991,366	\$1,225,328	\$1,470,500	\$1,733,267	\$2,008,423	
	For-Sale Housing	\$0	\$923,768	\$951,481	\$980,026	\$1,009,426	\$1,039,790	\$1,070,800	\$1,103,027	\$1,136,118	\$8,871,619	
	Office/Commercial	\$0	\$192,981	\$414,341	\$667,119	\$954,634	\$1,265,964	\$1,611,674	\$1,994,796	\$2,418,604	\$2,886,635	
	Retail	\$0	\$1,785,394	\$3,788,249	\$4,589,762	\$5,474,848	\$8,417,398	\$10,030,621	\$11,809,117	\$13,767,031	\$15,919,622	
	Hotel	\$0	\$0	\$0	\$0	\$2,466,180	\$5,080,330	\$5,232,740	\$5,389,722	\$5,551,414	\$5,717,996	
	Structured Parking	\$0	\$691,891	\$1,404,262	\$2,180,438	\$3,001,320	\$3,870,729	\$4,787,659	\$5,870,260	\$6,999,758	\$8,177,221	
	Surface Parking	\$0	\$213,321	\$439,440	\$462,624	\$468,202	\$480,188	\$494,504	\$509,432	\$524,715	\$540,456	
	Art Galleria	\$0	\$0	\$0	\$0	\$0	\$3,026,000	\$3,116,781	\$3,210,284	\$3,306,593	\$3,405,790	
Total Net Operating Income		\$0	\$35,431,273	\$43,794,553	\$51,110,684	\$61,351,385	\$77,202,181	\$86,299,940	\$95,967,946	\$106,239,250	\$124,850,295	
Development Costs												
Market-rate	Rental Housing	\$0	(\$42,048,720)	(\$43,310,182)	(\$44,609,487)	(\$45,947,772)	(\$47,326,205)	(\$48,745,991)	(\$50,208,371)	(\$51,714,622)	(\$53,266,008)	(\$54,864,042)
	For-Sale Housing	\$0	\$0	(\$17,971,646)	(\$18,510,795)	(\$19,066,119)	(\$19,638,103)	(\$20,227,246)	(\$20,834,063)	(\$21,459,085)	(\$22,102,858)	(\$22,765,943)
Affordable	Rental Housing	\$0	(\$4,129,785)	(\$4,253,679)	(\$4,381,289)	(\$4,512,728)	(\$4,648,109)	(\$4,787,553)	(\$4,931,179)	(\$5,079,115)	(\$5,231,488)	(\$4,889,586)
	For-Sale Housing	\$0	\$0	(\$1,458,738)	(\$1,522,500)	(\$1,547,575)	(\$1,594,002)	(\$1,641,822)	(\$1,691,077)	(\$1,741,809)	(\$1,794,063)	(\$1,847,895)
	Office/Commercial	\$0	(\$2,730,788)	(\$2,812,711)	(\$2,897,052)	(\$2,984,005)	(\$3,073,525)	(\$3,165,731)	(\$3,260,703)	(\$3,358,824)	(\$3,459,280)	\$0
	Retail	\$0	(\$21,528,288)	(\$22,174,136)	(\$6,487,702)	(\$6,682,333)	(\$27,952,610)	(\$11,447,753)	(\$11,791,185)	(\$12,144,921)	(\$12,509,268)	\$0
	Hotel	\$0	\$0	\$0	\$0	(\$18,570,859)	(\$19,128,022)	\$0	\$0	\$0	\$0	
	Structured Parking	\$0	(\$6,353,104)	(\$6,543,697)	(\$6,841,154)	(\$7,046,389)	(\$7,257,780)	(\$3,455,662)	(\$3,559,332)	(\$3,666,112)	(\$3,776,095)	\$0
	Surface Parking	\$0	(\$1,032,890)	(\$1,063,876)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
	Art Galleria	\$0	\$0	\$0	(\$11,022,884)	(\$11,353,570)	(\$11,694,177)	\$0	\$0	\$0	\$0	
	Total Infrastructure	(\$5,132,012)	(\$10,990,589)	(\$10,393,307)	(\$10,620,079)	(\$9,604,691)	(\$11,144,847)	(\$7,399,799)	(\$7,588,996)	(\$7,816,666)	(\$5,783,367)	(\$71,676)
Total Development Costs		(\$5,132,012)	(\$87,914,163)	(\$109,981,972)	(\$106,920,079)	(\$127,316,077)	(\$153,457,381)	(\$160,871,596)	(\$163,864,906)	(\$166,980,853)	(\$167,922,479)	(\$80,039,404)
Annual Cash Flow												
Net Operating Income		\$0	\$35,431,273	\$43,794,553	\$51,110,684	\$61,351,385	\$77,202,181	\$86,299,940	\$95,967,946	\$106,239,250	\$124,850,295	
Development Cost		(\$5,132,012)	(\$87,914,163)	(\$109,981,972)	(\$106,920,079)	(\$127,316,077)	(\$153,457,381)	(\$160,871,596)	(\$163,864,906)	(\$166,980,853)	(\$167,922,479)	(\$80,039,404)
Cumulative Development Cost		(\$5,132,012)	(\$93,046,175)	(\$203,028,147)	(\$309,948,226)	(\$437,264,302)	(\$590,721,683)	(\$759,593,244)	(\$925,458,146)	(\$1,100,367,478)	(\$1,290,400,882)	
Financing												
Financing Necessary		(\$309,948,226)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Debt Financing		(\$185,968,935)	(\$185,968,935)	(\$185,968,935)	(\$185,968,935)	(\$228,987,008)	(\$228,987,008)	(\$228,987,008)	(\$228,987,008)	(\$228,987,008)	(\$228,987,008)	
Equity Financing		(\$123,979,290)	\$185,968,935	\$185,968,935	\$185,968,935	(\$152,658,006)	\$228,987,008	\$228,987,008	(\$159,523,057)	\$239,284,586	\$239,284,586	
Interest Expense		(\$13,947,670)	(\$13,947,670)	(\$13,947,670)	(\$13,947,670)	(\$17,174,026)	(\$17,174,026)	(\$17,174,026)	(\$17,946,344)	(\$17,946,344)	(\$17,946,344)	
Unlevered												
Unlevered Cash Flow		(\$309,948,226)	\$0	\$35,431,273	\$43,794,553	(\$330,534,330)	\$61,351,385	\$77,202,181	(\$312,507,702)	\$95,967,946	\$106,239,250	\$124,850,295
Unlevered Terminal Cash Flow												
Unlevered Total Cost of Sale												
Total Unlevered Cash Flow		(\$309,948,226)	\$0	\$35,431,273	\$43,794,553	(\$330,534,330)	\$61,351,385	\$77,202,181	(\$312,507,702)	\$95,967,946	\$106,239,250	\$1,310,928,094
Unlevered IRR												11.14%
Levered												
Levered Cash Flow		(\$137,926,960)	(\$13,947,670)	\$21,483,603	\$29,846,883	(\$118,721,347)	\$44,177,359	\$60,028,156	(\$91,169,461)	\$78,021,602	\$88,292,906	\$106,903,951
Levered Terminal Cash Flow												\$1,069,039,507
Levered Total Cost of Sale												(\$53,451,975)
Total Levered Cash Flow		(\$137,926,960)	(\$13,947,670)	\$21,483,603	\$29,846,883	(\$118,721,347)	\$44,177,359	\$60,028,156	(\$91,169,461)	\$78,021,602	\$88,292,906	\$1,122,491,483
Levered IRR												23.90%
Levered NPV												\$299,660,616
Loan to Value Ratio (LVR)												60%

		Total Buildout	Year-by-Year Cumulative Absorption									
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Project Buildout by Development Units												
Market-rate	Rental Housing (units)	0	360	720	1,080	1,440	1,800	2,160	2,520	2,880	3,240	
	For-Sale Housing (units)	0	110	220	330	440	550	660	770	880	990	
Affordable	Rental Housing (units)	0	36	72	108	144	180	216	252	288	324	
	For-Sale Housing (units)	0	10	20	30	40	50	60	70	80	90	
	Office/Commercial (s.f.)	0	15,000	30,000	45,000	60,000	75,000	90,000	105,000	120,000	135,000	
	Retail (s.f.)	0	115,000	230,000	262,667	295,333	428,000	480,750	533,500	586,250	639,000	
	Hotel (rooms)	0	0	0	0	171	343	514	686	858	1,030	
	Structured Parking (spaces)	0	408	816	1,224	1,644	2,068	2,492	2,916	3,340	3,764	
	Surface Parking (spaces)	0	216	432	648	864	1,080	1,296	1,512	1,728	1,944	
	Art Galleria (s.f.)	0	0	0	0	0	150,000	150,000	150,000	150,000	150,000	
Project Buildout by Area												
Market-rate	Rental Housing (s.f.)	0	324,000	648,000	972,000	1,296,000	1,620,000	1,944,000	2,268,000	2,592,000	2,916,000	
	For-Sale Housing (s.f.)	0	121,000	242,000	363,000	484,000	605,000	726,000	847,000	968,000	1,089,000	
Affordable	Rental Housing (s.f.)	0	32,400	64,800	97,200	129,600	162,000	194,400	226,800	259,200	291,600	
	For-Sale Housing (s.f.)	0	11,000	22,000	33,000	44,000	55,000	66,000	77,000	88,000	99,000	
	Office/Commercial (s.f.)	0	15,000	30,000	45,000	60,000	75,000	90,000	105,000	120,000	135,000	
	Retail (s.f.)	0	115,000	230,000	262,667	295,333	428,000	480,750	533,500	586,250	639,000	
	Hotel (s.f.)	0	0	0	0	75,000	150,000	150,000	150,000	150,000	150,000	
	Structured Parking (s.f.)	0	130,541	261,082	393,582	526,082	658,582	791,832	924,332	1,056,832	1,189,332	
	Surface Parking (s.f.)	0	69,159	138,318	138,318	138,318	138,318	138,318	138,318	138,318	138,318	
	Art Galleria (s.f.)	0	0	0	0	0	150,000	150,000	150,000	150,000	150,000	
	Total (s.f.)	0	818,100	1,636,200	2,304,767	3,048,333	4,041,900	4,659,900	5,276,700	5,894,100	6,511,500	

3. Unit Development and Infrastructure Costs			
Development Costs	Unit Cost	Total Costs	
Market-rate	Rental Housing	(\$120,306)	(\$482,041,451)
	For-Sale Housing	(\$163,379)	(\$182,575,859)
Affordable	Rental Housing	(\$118,158)	(\$42,444,782)
	For-Sale Housing	(\$145,674)	(\$14,819,489)
	Office/Commercial	(\$175)	(\$27,467,683)
	Retail	(\$180)	(\$131,140,304)
	Hotel	(\$108,330)	(\$37,698,918)
	Structured Parking	(\$15,574)	(\$48,499,325)
	Surface Parking	(\$4,779)	(\$2,096,766)
	Art Galleria	(\$225)	(\$33,775,099)
Infrastructure Costs			
	Roads (9)	\$0	(\$7,936,000)
	Other Hardscaping (10)	\$0	(\$3,126,918)
	Landscaping (11)	\$0	(\$1,231,898)
	Art Proj to Block Power Station (12)	\$0	(\$300,000)
	Canal	\$0	(\$9,213,758)
Total Infrastructure Costs			(\$19,507,700)
Total Development Costs			(\$1,109,361,395)

4. Equity and Financing Sources		
Equity Sources (total)	%	Amount
Recycled Material from Demolition (1)	0.23%	\$2,513,525
Community Development Block Grant Program (2)	0.27%	\$3,000,000
Brownfields Economic Development Initiative (3)	0.18%	\$2,000,000
Art Subsidy (4)	0.05%	\$1,000,000
CCDC Subsidy (5)	0.18%	\$2,000,000
Owner's Equity Contribution (6)	39.05%	\$433,231,017
	40%	\$443,744,542
Financing Sources (total)		
	%	Value
Loan Required (7)	54.91%	\$609,149,737
Low Income Tax Credits (8)	5.09%	\$56,467,076
	60%	\$665,616,813

5. Answers to the Owners' Big Questions	
Site Value after Redevelopment (Leveraged NPV)	\$299,660,616
Site Value after Redevelopment (Leveraged Terminal Value in Year 10)	\$1,069,039,507
Leveraged IRR	23.90%
Unleveraged IRR	11.14%



East Village Arts District Master Site Plan



Main Corridor Diagram



Main Retail Corridor Rendering



Main Corridor Rendered Elevation

MIT BOSTON OPEN
REAL ESTATE FINANCE
CASE COMPETITION 2010

TEAM MEMBERS:

Elli Lobach, MDesS 2010
Ian Klein, MAUD 2010
Kristen Hunter, MDesS 2010

In April 2010, the MIT Center for Real Estate Alumni Association (AACRE) hosted the inaugural Boston Open Real Estate Finance Case Competition. Teams, consisting of 3-4 graduate students specializing in real estate finance and development, were permitted four working days to formulate a comprehensive acquisition, financing, and redevelopment strategy for the subject site, complete with detailed financial analysis and project phasing. Mid-career real estate finance professionals scrutinized the submitted models to select three teams to advance to the final round. The second stage of the competition required finalists to prepare a 15-minute investment committee-quality presentation, which was subjected to rigorous inquiry from a distinguished panel of industry veterans whose vote determined the outcome.

Harvard GSD teammates Elli Lobach MDesS '10, Ian Klein MAUD '10, and Kristen Hunter MDesS '10 predicated their acquisition and redevelopment strategy on identifying viable programming options that could function within the tight building footprint and compete against forthcoming supply in the immediate area. Proposed uses also had to offer reasonable near-term financing



Harvard GSD Winning Team

prospects and sufficient risk adjusted returns. In addition, the GSD team investigated the current owner's original basis in the property, additional capital expenditures, and likely capital appreciation expectations to calculate an acceptable offer range.

Competition organizers selected an underutilized site adjacent to downtown Boston's Theatre District and the Chinatown neighborhood. The property comprised three parcels and two distinct structures, one of which was the landmark Hayden Building designed by H.H. Richardson in the late nineteenth century. After conducting site, zoning, market, profitability, and capital markets analyses, the GSD team recommended a master-leased, privately operated student housing complex with street-level retail space. The four surrounding colleges and universities in the immediate vicinity have an aggregate enrollment of nearly 17,000 students, but can accommodate less than 20% of them in dormitories, resulting in an unmet demand for approximately 3,500 beds. Stringent public approvals processes and neighborhood resident resistance to further encroachment from academic facilities limit these institutions' abilities to deliver additional residential space. Utilizing rental structures similar to those in university-owned housing promised a higher profit margin per square foot than any alternative use and had the advantage of not requiring any on-site parking.

Recognizing the challenges of raising equity capital and securing debt in the current economic climate, the GSD team underwrote three different capital structures that would enable the project to proceed regardless of when the space was leased. Each of these financing schemes incorporated Historic Preservation Tax Credit equity.

To facilitate flexibility in building configuration and programming analysis,

development and financing assumptions, phasing, and deal structure, a dynamic and complex Excel model was needed. Employing Visual Basic Applications (VBA) macros, Lobach, a former software development manager, constructed the model to allow inputs, financing, and partnership terms to be changed easily, whereupon the development budget, discounted cash flow analysis, and returns would automatically be recalculated.

On the strength of both the first-round proposal and final round presentation, the GSD team prevailed over competitors from New York University's Schack Institute of Real Estate (2nd place), and the University of California at Berkeley Haas School of Business (3rd place). The final round jury unanimously agreed that Lobach, Klein, and Hunter's innovative solution was sufficiently detailed and realistic to withstand even the most intensive investment committee interrogation. Their victory was profiled in the May/June 2010 issue of *Urban Land* magazine. ■

HAYDEN COURT: STUDENT HOUSING & RETAIL



FIGURE 2 - H.H. Richardson's Hayden Court Building

A YEAR OF SUCCESS

	Pros	Cons	Option Modeled	Recommendation
 Residential		<ul style="list-style-type: none"> 468 units in pipeline (sale/rental) Lack of debt for condominiums Site noise/traffic unsuitable 	X	X
 Office	<ul style="list-style-type: none"> Site adjacent to major hospital Office conversion = fall-back 	<ul style="list-style-type: none"> Non-CBD fringe location Hayden Bldg. = inefficient floorplate Least profitable per square foot 	✓	X
 Retail	<ul style="list-style-type: none"> Chinatown = lower vacancy rate More profitable than luxury rental on a net basis Optimizes ground level 		✓	✓
 Student Housing	<ul style="list-style-type: none"> City urging more campus housing Universities lack land Tufts & NE Law = no/little housing & Emerson requires underclassmen to live on-campus Unmet demand > total existing + planned beds Credit tenant = lower debt cost & cap rate 		✓	✓

EXHIBIT 1 - Highest and Best Use Analysis

Building Assumptions	Investment Return Assumptions	Building Sale Assumptions																																																																																																					
681-691 Washington Street Lot Area: 4,325 s.f. Anticipated Hold: 12 years Dimensions: 45' x 89' Stab. Year: 2012	Joint Venture Structure Tier 1: Preferred Rate 12% To Sponsor 100% To Investor 0% Tier 2: Handle Rate 15% To Sponsor 20% To Investor 80% Tier 3: To Sponsor 60% To Investor 40%	Sale Calculation NOI Year 10: \$ 1,395,867 Cap Rate: 6.7% Value: \$ 20,986,584 Book Value Calculation Total Development Cost: \$ 16,495,836 CapEx: \$ (4,192,891) Less Depreciation: \$ 12,302,945 Net Book Value: \$ 20,986,584 Gain on Sale: \$ 20,986,584 Selling Price: \$ 20,986,584 Less Commissions: -4.5% \$ (944,306) Net Sales Price: \$ 20,042,187 Less Book Value: \$ (12,302,945) Gain on Sale: \$ 7,739,243																																																																																																					
Building Assumptions <table border="1"> <thead> <tr> <th>Program Space</th> <th>Rent</th> <th>Vacancy</th> <th>Cap Rate</th> <th>NSF</th> <th>SF/Unit</th> <th>Units</th> </tr> </thead> <tbody> <tr> <td>Student Housing</td> <td>\$14,340</td> <td>0%</td> <td>6.5%</td> <td>20,224</td> <td>230</td> <td>81</td> </tr> <tr> <td>Office</td> <td>\$41</td> <td>0%</td> <td>6.5%</td> <td>1,612</td> <td>-</td> <td>-</td> </tr> <tr> <td>Retail</td> <td>\$31</td> <td>8%</td> <td>7.5%</td> <td>3,891</td> <td>-</td> <td>-</td> </tr> <tr> <td>Total</td> <td></td> <td>6.7%</td> <td></td> <td>25,727</td> <td></td> <td>81</td> </tr> </tbody> </table>	Program Space	Rent	Vacancy	Cap Rate	NSF	SF/Unit	Units	Student Housing	\$14,340	0%	6.5%	20,224	230	81	Office	\$41	0%	6.5%	1,612	-	-	Retail	\$31	8%	7.5%	3,891	-	-	Total		6.7%		25,727		81	Return Summary Cash on Cash Return: 14.9% Unleveraged IRR: 8.4% Leveraged IRR: 20.9% Sponsor IRR: 23.7% Investor IRR: 0.9%	Capex <table border="1"> <thead> <tr> <th>Cap Rate</th> <th>5.0%</th> <th>5.5%</th> <th>6.0%</th> <th>6.5%</th> <th>7.0%</th> </tr> </thead> <tbody> <tr> <td>5.0%</td> <td>23.3%</td> <td>22.0%</td> <td>21.7%</td> <td>18.8%</td> <td>16.2%</td> </tr> <tr> <td>5.5%</td> <td>22.3%</td> <td>21.6%</td> <td>20.3%</td> <td>17.4%</td> <td>14.8%</td> </tr> <tr> <td>6.0%</td> <td>21.6%</td> <td>20.3%</td> <td>18.9%</td> <td>16.0%</td> <td>13.4%</td> </tr> <tr> <td>6.5%</td> <td>20.5%</td> <td>19.1%</td> <td>17.6%</td> <td>14.6%</td> <td>12.0%</td> </tr> <tr> <td>7.0%</td> <td>19.5%</td> <td>18.0%</td> <td>16.3%</td> <td>13.3%</td> <td>10.7%</td> </tr> <tr> <td>7.5%</td> <td>18.5%</td> <td>16.9%</td> <td>15.1%</td> <td>12.0%</td> <td>9.4%</td> </tr> <tr> <td>8.0%</td> <td>17.5%</td> <td>15.8%</td> <td>13.8%</td> <td>10.6%</td> <td>8.0%</td> </tr> <tr> <td>8.5%</td> <td>16.4%</td> <td>14.7%</td> <td>12.5%</td> <td>9.2%</td> <td>6.7%</td> </tr> <tr> <td>9.0%</td> <td>15.7%</td> <td>13.6%</td> <td>11.1%</td> <td>7.7%</td> <td>5.1%</td> </tr> <tr> <td>9.5%</td> <td>14.7%</td> <td>12.5%</td> <td>9.7%</td> <td>6.2%</td> <td>3.6%</td> </tr> </tbody> </table>	Cap Rate	5.0%	5.5%	6.0%	6.5%	7.0%	5.0%	23.3%	22.0%	21.7%	18.8%	16.2%	5.5%	22.3%	21.6%	20.3%	17.4%	14.8%	6.0%	21.6%	20.3%	18.9%	16.0%	13.4%	6.5%	20.5%	19.1%	17.6%	14.6%	12.0%	7.0%	19.5%	18.0%	16.3%	13.3%	10.7%	7.5%	18.5%	16.9%	15.1%	12.0%	9.4%	8.0%	17.5%	15.8%	13.8%	10.6%	8.0%	8.5%	16.4%	14.7%	12.5%	9.2%	6.7%	9.0%	15.7%	13.6%	11.1%	7.7%	5.1%	9.5%	14.7%	12.5%	9.7%	6.2%	3.6%
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Financing Assumptions Debt Strategy Options: Bond Financing: Yes Credit Tenant Lease: No Permanent Loan Only: No Debt Financing Equity Split: Sponsor: 33% Investor: 67% Capital Stack <table border="1"> <thead> <tr> <th>Equity</th> <th>100%</th> <th>1,977,650</th> <th>12%</th> </tr> </thead> <tbody> <tr> <td>Sponsor Equity</td> <td>9%</td> <td>\$ -</td> <td>9%</td> </tr> <tr> <td>Historic Pres. Tax Credit</td> <td></td> <td>\$ 277,305</td> <td>2%</td> </tr> <tr> <td>Debt (Construction Period)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Construction Loan</td> <td></td> <td>\$ -</td> <td>0%</td> </tr> <tr> <td>Bond Financing</td> <td></td> <td>\$ 14,240,881</td> <td>36%</td> </tr> <tr> <td>Total Construction Period Sources</td> <td></td> <td>\$ 16,495,836</td> <td>100%</td> </tr> <tr> <td>Debt (Stabilized)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Permanent Loan</td> <td></td> <td>\$ -</td> <td>-</td> </tr> <tr> <td>Credit Tenant Loan</td> <td></td> <td>\$ -</td> <td>-</td> </tr> <tr> <td>Bond Financing</td> <td></td> <td>\$ 14,240,881</td> <td>-</td> </tr> <tr> <td>Total Stabilized Debt</td> <td></td> <td>\$ 14,240,881</td> <td></td> </tr> </tbody> </table>	Equity	100%	1,977,650	12%	Sponsor Equity	9%	\$ -	9%	Historic Pres. Tax Credit		\$ 277,305	2%	Debt (Construction Period)				Construction Loan		\$ -	0%	Bond Financing		\$ 14,240,881	36%	Total Construction Period Sources		\$ 16,495,836	100%	Debt (Stabilized)				Permanent Loan		\$ -	-	Credit Tenant Loan		\$ -	-	Bond Financing		\$ 14,240,881	-	Total Stabilized Debt		\$ 14,240,881		Interest Rates 4.8% 5.0% 4.8% 6.0% 6.5% 7.0%	Net Cash to Seller Net Sales Price: \$ 20,042,187 Less Loan Bal: \$ (11,665,129) Less CG Tax Liability: \$ (1,515,522) Net Cash From Sale: \$ 6,861,540																																																					
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EXHIBIT 2 - Financial Analysis Summary

Sources	Debt Financing	Bond Financing
Equity Sponsor Equity: \$ 1,977,650 Preferred Equity: \$ - MA Historic Pres. Tax Credits: \$ 277,305 MA&I Tax Credit Calculation: Rehab Hard Costs: \$ 1,573,000 Tenant Improvements: \$ 35,750 Pro Rata Soft Costs: \$ 702,126 Qualified Rehab Costs: \$ 2,310,876 Application Fee: \$ 15,000 Applicable Percentage: 20% Tax Credits Received: \$ 462,175 Tax Credit Sale - Prevailing Rate: 60% Tax Credit Equity Proceeds: \$ 277,305	Construction Loan Loan Type: Floating Rate, I/O Interest Rate: 6.25% Prime: 3.25% Spread: 300 bp Term (construction period): 18 months Fees: 1.00% \$115,471 Fees: \$ 140,000 LTV: 90% Loan Amount: \$ 11,547,055 PMT (mo.): \$ 69,141 Permanent Loan Loan Type: Fixed Rate, Amortizing Interest Rate: 5.50% Term: 30 yrs Points: 1.00% \$128,136 Fees: \$ 80,000 Non-Credit Tenant NOI: \$ 1,134,967 DCR: 1.3 Debt Service (ann.): \$ 873,052 Debt Service (mo.): \$ 72,754 Loan Amount: \$ 12,813,619 Credit Tenant Loan Loan Type: Fixed Rate, Amortizing Interest Rate: 6.00% Term: 25 yrs Points: 0.5% \$ - Credit Tenant NOI: \$ - DCR: 1.05 Debt Service (ann.): \$ - Debt Service (mo.): \$ - Loan Amount: \$ 0	Tax Exempt Bond Loan Type: Bond Issuance Interest Rate: 4.25% Amortization: 30 yrs Loan Term: 10 yrs Prepayment Penalty: 2.0% LTV: 90% LTV Loan Amount: \$ 14,240,881 NOI: \$ 1,134,967 DCR: 1.15 Debt Service (Ann.): \$ 986,928 Debt Service (Mo.): \$ 82,244 NOI Loan Amount: \$ 16,718,305 Loan Amount: \$ 14,240,881 PMT (mo.): \$70,057 PMT (ann.): \$840,679 Points & Interest Carry: 2.0% \$ 284,818 Credit Enhancement: 2.0% \$ 284,818 Application Fee: \$ 18,000 Bond Issuance Legal: \$ 85,000 Total Fees: \$ 672,635

EXHIBIT 3 - Financing Strategies

Acquisition Costs			Cost	GSF	\$/GSF
Total Acquisition Price			\$ 3,607,000		
Land	\$ 472,000				
Buildings	\$3,135,000			14,909	\$ 210
Acquisition Closing Costs			\$ 36,070		
Total Acquisition Cost			\$ 3,643,070	14,909	\$ 244

Hard Costs			Cost	GSF	\$/GSF
Honey Court Building:	Demolition	Yes	\$ 175,000	6,476	\$ 27
	New Construction	\$ 260 /GSF	\$ 6,435,000	24,750	\$ 260
	Parking	N/A /GSF	\$ -	-	\$ -
Hayden Building:	Student Housing	\$ 275 /GSF	\$ 1,573,000	5,720	\$ 275
(Rehab Only Permitted)	Office	\$ 220 /GSF	\$ -	-	\$ -
	Retail	\$ - /GSF	\$ -	2,860	\$ -
Environmental		N/A	\$ -	-	\$ -
Hard Cost Contingency			\$ 654,640	33,330	\$ 20
Total Hard Costs			\$ 8,837,640	33,330	\$ 265

Soft Costs			Cost	NSF	\$/NSF
Architecture, Engineering, Consultants			\$ 441,882	24,654	\$ 18
Bond			\$ 35,351	24,654	\$ 1
Survey and Appraisal			\$ 10,000	24,654	\$ 0
Clerk			\$ 60,000 /yr	\$ 90,000	24,654 \$ 4
Permits and Fees			\$ 100,000	24,654	\$ 4
Legal			\$ 100,000	24,654	\$ 4
FF&E Allowance - Student Housing			\$ 1,000 /bed	\$ 81,000	20,224 \$ 4
TI - Office			\$ 30 /NSF	\$ -	\$ -
TI - Retail			\$ 25 /NSF	\$ 97,269	3,891 \$ 25
Marketing/Leasing Comissions			\$ 50,482	24,654	\$ 2
Lease-up/Operating Contingency			\$ 84,137	24,654	\$ 3
Insurance: Builders Risk/Owners GL			\$ 132,565	24,654	\$ 5
Utilities Cost			\$ 10,000	24,654	\$ 0
Real Estate Taxes During Development			\$ 35,844 /annum	\$ 53,766	24,654 \$ 2
Soft Cost Contingency			\$ 64,323	24,654	\$ 3
Developer Overhead			\$ 688,358	24,654	\$ 28
Developer Fee			\$ 688,358	24,654	\$ 28
Total Soft Costs			\$ 2,727,491	24,654	\$ 111
Total Land + Hard + Soft Costs			\$ 15,208,201	33,330	\$ 456

Financing Costs			Cost	GSF	\$/GSF
Construction Loan	Points		\$ -		
	Fees		\$ -		
Interest During Construction	1.00 yrs		\$ 600,000		
Loan Fees:	Credit Tenant Lease - Issuance Expense		\$ -		
	Permanent Loan Points		\$ -		
	Permanent Loan Fees		\$ -		
Historic Rehabilitation Tax Credit Fees			\$ 15,000		
Tax-Exempt Bond Issuance			\$ 672,635		
Total Financing Costs			\$ 1,287,635		

Total Development Cost			\$ 16,495,836	33,330	\$ 495
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EXHIBIT 4 - Development Budget

FEDERAL HOME LOAN BANK
OF BOSTON AFFORDABLE
HOUSING DEVELOPMENT
COMPETITION 2010

TEAM MEMBERS:

Julie Chan, MIT MCP 2011
Jorge Colón, MDesS 2011
Julie Leadbetter, MPA 2010
Joseph Martinez, MDesS 2011
Terra Rogers, MBA 2010
Alexis Taylor, MIT MCP 2011
Jasmine Tillu, MIT MCP 2011
Yan-Ping Wang, MIT MCP 2011

TEAM ADVISORS:

Edward Marchant, Professor
Kendra Halliwell, ICON architecture
Seth Hoffman, Affiliated Projects
Paul Silverstone AIA, MassHousing

The Affordable Housing Development Competition is sponsored annually by the Federal Home Loan Bank of Boston. Now in its 11th year, the competition partners teams of graduate students with local developers, real estate finance professionals, and experienced architects to create proposals for affordable housing in the Boston metro area.

Eight teams entered the 2010 competition and included students from Boston Architectural College, Harvard University, Massachusetts Institute of Technology, and Tufts University. The first place team comprised four Harvard students and four MIT students: Jorge Colon and Joseph Martinez, MDesS, Harvard Graduate School of Design; Julie Leadbetter, Mid-Career MPA, Kennedy School of Government; Terra Rogers, MBA, Harvard Business School; Julie Chan, Alexis Taylor, Jasmine Tillu, and Yan-Ping Wang, MCP, MIT. They shared a \$10,000 prize with the Coalition for a Better Acre (CBA), a non-profit community development corporation from Lowell, Massachusetts.



The Harvard/MIT Winning Team

The team's "Shawknit Mill" project proposed renovating an abandoned mill into twenty-two 2-bedroom units and thir-

ty-one 3-bedroom units with community space, amenities, and social services for low-income families. The project targeted residents making up to 60% of area median income, who would pay no more than 30% of their gross income for rent.

The team conducted extensive field studies and community surveys to determine the best use for the site. Restoring the dilapidated site to active use was of utmost importance to the community: it had become blighted, a focus of the community's safety concerns, and a problem had developed with stormwater drainage. The final design reflected a commitment to the economic, environmental, and social sustainability of the community. It creatively combined funding sources to assure long-term affordability and financial health. Enterprise Green Communities and LEED criteria were followed in the design, focusing on the central architectural decision to reuse the core and shell of the existing building. The project also served its residents and the greater community through a job-training program and social service partners.

Like all affordable housing developments, complex project financing was a critical component. Due to the constrained cash flows, the project necessitated a layering of funding sources: equity generated from tax credits, senior loans through private financing of tax-exempt bonds, subordinate loans at low or zero interest, and grants from trust funds. All financing sources came with specific eligibility requirements, forming "puzzle pieces" that had to be correctly aligned to make the deal work.

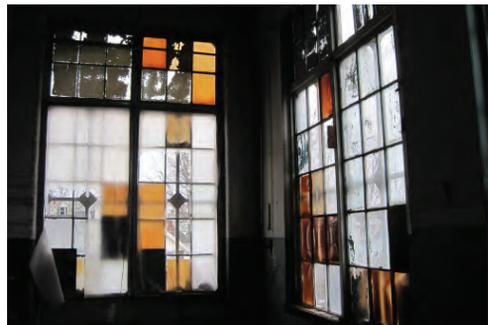
With help from Jeff Fugate of CBA, Peter Hollands of Boston Private Bank, and Professors Edward Marchant and Lee Cott of Harvard, the team was able to structure the financing during construction and after stabilization. The \$16M capital stack included \$3.6M in Historic Tax Credit equity, \$7.3M in Low Income

Housing Tax Credit equity, \$2.7M in senior debt, and \$1.8M in subordinate debt. Total development cost was \$300,766 per unit. 80% of the units were affordable to families making between 45-60% of AMI, and the remaining 20% of the units provided affordability to residents at 30% of AMI through project-based Section 8 rental assistance. ■

For more information about the competition, visit <http://www.fhlbboston.com/compete/>



Existing Building Site and Inspiration Images



Existing Condition - Interior of Mill Building



Rendering - New Community Space

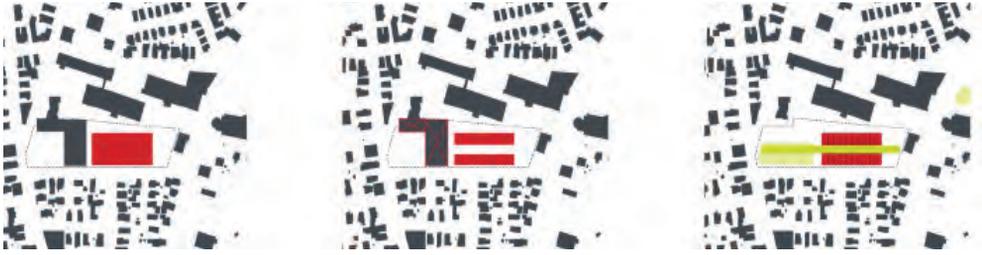
A YEAR OF SUCCESS



Community Activity Space at Entrance to Shawknit Mill



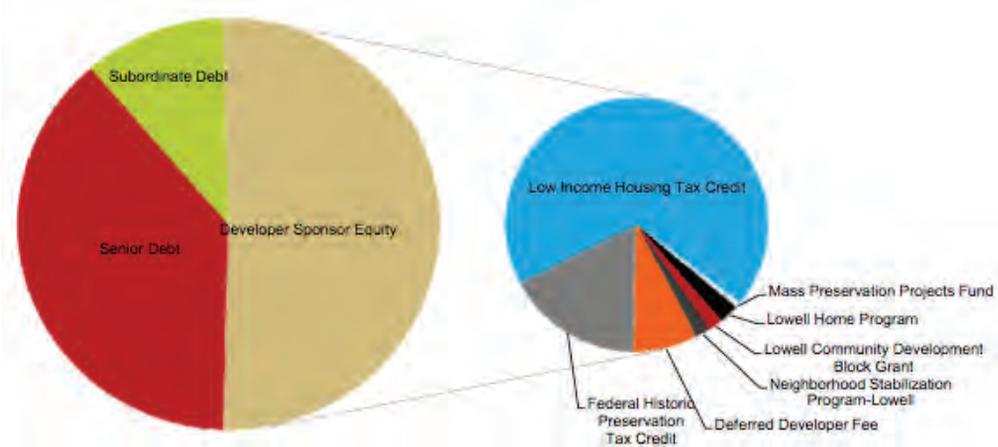
Site Plan of Proposed Development



Central Spine of Building Break-Down, Building Massing, and Network into Neighborhood



Section Reveals the Stacking of Units and Innovative Reuse of Existing Floor Slabs



	Amount		% of total	\$ / Unit	\$ / GSF
	Construction Period	Stabilization			
Developer Sponsor Equity					
Federal Historic Preservation Tax Credit	\$1,374,295	\$1,832,393	8.6%	\$25,930	\$25
State Historic Preservation Tax Credit	\$0	\$1,725,859	0.0%	\$0	\$0
Low Income Housing Tax Credit	\$5,513,484	\$7,351,313	34.6%	\$104,028	\$101
Mass Preservation Projects Fund	\$50,000	\$50,000	0.3%	\$943	\$1
Lowell Home Program	\$200,000	\$200,000	1.3%	\$3,774	\$4
Lowell Community Development Block Grant	\$150,000	\$150,000	0.9%	\$2,830	\$3
Neighborhood Stabilization Program - Lowell	\$150,000	\$150,000	0.9%	\$2,830	\$3
Deferred Developer Fee	\$636,563	\$0	4.0%	\$12,011	\$12
Senior Debt					
Enterprise Bank (construction)	\$6,116,276	\$0	38.4%	\$115,401	\$112
Enterprise Bank (permanent)	\$0	\$2,731,054			
Subordinate Debt					
DHCD Home Program	\$750,000	\$750,000	4.7%	\$14,151	\$14
Affordable Housing Trust Fund	\$1,000,000	\$1,000,000	6.3%	\$18,868	\$18
CEDAC Predevelopment Loan*	\$0	\$0	0.0%	\$0	\$0
Total Sources of Funds	\$15,940,618	\$15,940,618	100.0%	\$300,766	\$291

Capital Stack

	Acquisition	Rehabilitation
Total Eligible Development Costs	\$750,000	\$12,731,257
Less: Portion of Grants Allocated to Basis		\$1,000,000
Less: 20% Historic Rehab Credit Basis Reduction		\$3,558,252
Less: Nonqualified source of financing		\$0
Subtotal: Eligible Basis	\$750,000	\$8,173,004
"Hard to develop" area	100%	130%
Basis per Unit		\$200,470
Basis cap per Unit		\$200,000
Percent Low-Income	100%	100%
Applicable Rate	3.49%	9.00%
Maximum Annual Tax Credit Amount	\$26,175	\$954,000
Total Annual Tax Credit Amount		\$980,175
Equity/Credit Ratio		75%
Estimated Net LIHTC Syndication Yield		\$7,351,313
Qualified Basis Assumptions for Acquisition Credit		
Total Land Cost		250,000
Building Cost		750,000
		Total 1,000,000

Tax Credit Yield

Student + Developer

NAME:

Dawanna Williams

SCHOOL:

Harvard Kennedy School

DEGREE:

Mid-Career MPA, 2010



GENERAL ADVICE

uW - *Today, where do you see the opportunities for someone starting out in real estate development?*

DW - Two of the clearest opportunities for development are the arenas of emerging markets and distressed assets.

uW - *If you could give a Harvard student planning to move into the real estate development profession three pieces of advice, what would they be?*

DW - My advice to students planning to move into the real estate development profession is to (1) gain meaningful experience, (2) operate with integrity, and (3) plan for cycles of volatility that are inherent in the real estate market.

CAREER PATH

uW - *How has your time at Harvard impacted your future plans and career path?*

DW - I had always planned to find a way to serve others as a developer, but didn't know how. The housing downturn gave me an opportunity to slow down and re-

search an idea that had been brewing in my mind for a long time. After Hurricane Katrina, and witnessing seemingly inadequate housing being provided, I began thinking about the domestic and international need to provide solid emergency housing after disasters. While the housing market was hot, I did not have the time to research my idea of starting a foundation with an exclusive mission of providing emergency housing to people domestically and internationally who are displaced by war, rapid climate change, or other disasters. Taking a sabbatical to attend Harvard Kennedy School allowed me the opportunity to fully research the foundation idea, as well as form relationships with people from around the world who will be directly involved in public policy.

uW - *What is the start-up story behind your real estate business venture?*

DW - I practiced commercial real estate law with large law firms in New York City for several years starting in the late 1990s, representing developers, lending institutions, and buyers/sellers. I found that I liked the business, and started considering opportunities to get involved on the business side of real estate. As I worked on large-scale projects at the law firm, I realized that some small urban communities in New York City were not being developed and that small scale appealed to me. While still working as a lawyer, I started buying townhouses in my own Brooklyn neighborhood (Fort Greene/Clinton Hill), renovating them into rental apartments, and using the proceeds to make more purchases. Given my love of art and architecture, I was drawn to properties marked by tangible and intangible hallmarks, such as historic resonance, architectural distinction, thriving churches, intellectuals, and artists. After completing several small apartment buildings, I developed a niche of constructing high-quality housing in historic but undervalued communi-

ties. In 2003, I left the practice of law to start my own real estate development firm. My short-term goal was to work on small- and medium-scale developments in emerging urban communities. We have worked on several projects to date and I look forward to the firm's continued growth.

uW - *What is your definition of success? Do you feel your company has achieved this?*

DW - I'm not fond of using the word "success" since it means different things to different people. For me, success is a combination of developing enough self-awareness to discover or know your purpose in life, finding peace with yourself and the relationships in your life, achieving financial security from the labor of your work, and operating with integrity and high standards in everything you do.

PROJECTS

uW - *Please talk a little bit about your capital sources. Where did your funding/capital come from? Did you secure it before or after the current market downturn? How did you go about getting it?*

DW - In the past, I sought commercial mortgages with a loan-to-value ratio of 80% from commercial banks and used savings or leveraged other assets to come up with the required 20% equity. For two projects, I partnered with a high-net-worth individual to raise equity. Before the housing bubble burst, such LTV ratios were not difficult to obtain. Generally, I contacted a banker with whom I was acquainted, or through a referral. If an applicant had good credit history, a proven track record, and the required equity on-hand, obtaining approval from a bank's underwriting division wasn't too difficult. I have not sought funding for a project in the current economic environment, but I have been told by bankers

that they now seek LTV ratios closer to 60% for commercial properties, require larger equity reserves, and have instituted increased credit standards.

uW - *How has the current recession impacted your project?*

DW - I completed a project last year in the midst of the economic crisis. It is a twenty-four loft, eight-story condominium, with views of Ben Franklin Bridge, in the Northern Liberties neighborhood, located in center city Philadelphia. The recession impacted many aspects of the project. The bank required additional equity to make-up for the decrease in asset value. The contractor experienced difficulties, which caused the development team to change contractors in the middle of the project. Most significantly, sales were extremely slow following completion. Recently, sales have picked up and we now see light at the end of the tunnel. After several successful projects, it was humbling to persevere through a difficult project. The lessons learned about leadership, surviving market volatility, and maintaining integrity were invaluable.

uW - *What measures have you taken during the current economic downturn to "weather the storm"?*

DW - As with many developers, the crisis has caused me to alter development plans. I refrained from purchasing any properties during the crisis and delayed plans for developments in the pipeline. With respect to on-going expenditures, I've sought to reduce the amount of, or eliminate, budgetary line items, where feasible.

uW - *What market are you serving? How has your product addressed your target market?*

DW - The overwhelming majority of our buyers have been professionals who are urban-centric and focused on purchasing

a high-quality dwelling. Our product addresses that target market by delivering well-appointed signature properties with high-quality workmanship. The needs of potential dwellers are carefully considered in finalizing the development plans.

uW - *How do you go about marketing your project/business? What has been your most successful marketing strategy?*

DW - All of our projects have been marketed by professional brokerage firms. They provide advice during the development process about how best to market the project in the then-current market. As a developer, it's imperative to employ teams of professionals during pre-development and not attempt to perform tasks outside your core competency. The marketers typically create a brand, determine advertising outlets, and solicit reservations from potential buyers to create buzz before the project is completed. As the process progresses, I continually test the marketing strategy by asking myself "would I want to live here?" The answer has to be "yes" before being released to the public, and perhaps that's my most-successful marketing strategy. ■

603-617 NORTH AMERICAN STREET

The twenty-four loft, eight-story condominium designed by the Philadelphia firm EM Architecture boasts views of the Ben Franklin Bridge and is located a block away from the eleven-story American Lofts building designed by Winka Dubbeldam. The twenty-four residential condominium units include ground-floor parking for all units (one space per residential unit). Most of the units feature water, city, and/or bridge views.

The project is one of the few mid-rise buildings permitted in Northern Liberties, adding a unique and much-needed component to the growth of the community. Due to recent zoning changes, height restrictions will prevent future development of mid- to high-rise buildings. Hence, only those projects that are already approved, or are granted a variance, will compete with this project.

PROJECT DATA

LOCATION: Philadelphia, Pennsylvania

PARCEL SIZE: 11,342 sq. ft.

NET FLOOR AREA: 33,984 sq. ft.

1ST FLOOR: Lobby, Vestibule, Parking

2ND - 7TH FLOORS: 24 Residential Units,
4 Units Per Floor, (Each Apartment Consists of 2-Bedrooms and 2-Bathrooms)



Model Unit Living Room with Downtown Philadelphia View (Water Views on Opposite Side of Building)



Seven-Story New Construction Building with 17-Foot Balconies in Each Unit



Model Unit Bedroom



Model Unit Common and Dining Area



Bleached Oak Floors in Unit With All-Bosch Appliances and Caesarstone Countertops



Model Unit Master Bedroom



Model Unit View From Kitchen

Student + Developer

NAME:

Jason Phillips

SCHOOL:

Harvard Graduate School of Design

DEGREE:

MDesS Real Estate & Project
Management, 2010



GENERAL ADVICE

uW - *If you could give a Harvard student planning to move into the real estate development profession three pieces of advice, what would they be?*

JP - 1) Expect the unexpected. Development is a dynamic process and dependent upon numerous factors beyond your control. While you can manage many of these variables to a certain extent, inevitably something will require a quick change in strategy. If you do not remain flexible, you will compound the problem.

2) Do not underestimate the opposition. Every development project is eventually met with individuals or organizations that will want to stop your deal dead in its tracks. The supporters rarely show up to meetings while the opponents typically turn out in droves. Anticipate their concerns and have mitigation strategies prepared.

3) Become intimate with the politics surrounding the local development process. Get to know the staff, commissioners, and politicians who will be players in the process. Call or meet with these in-

dividuals to explain the project and how it meshes with local land use plans, ordinances, and economic development goals. If you go into an approval meeting not knowing the outcome of the vote, you have not done enough homework.

CAREER PATH

uW - *How has your time at Harvard impacted your future plans and career path?*

JP - The tools and knowledge acquired at Harvard have definitely laid the groundwork to launch my future to a higher trajectory. While I had previously built a solid foundation of practical, hands-on real estate know-how, I feel it was lacking the sophistication necessary to communicate on the same level as experienced industry professionals. I am also coming away far better-equipped to understand and compete in more complex markets and transactions. We are fortunate enough to be surrounded by, and have access to, many of the top real estate practitioners in the world. These people have opened my eyes to a myriad of opportunities and have certainly helped give me the confidence to contemplate and pursue new ventures.

uW - *What is the start-up story behind your real estate business venture?*

JP - I was in commercial lending out of college, but found the work to be a bit tedious. One of my close friends was pursuing his dream of playing professional football, which made me reflect more on my dreams. I decided to spend a couple of years trying to play professional golf. After reaching some objectives, but falling a bit short on others, I decided it was time to move on. I wound up meeting several other young guys who were involved in the development of a golf course community and were looking for someone with financial experience to join their team. I had such a great time

with that project that I began looking for a deal of my own. I drafted a business plan, found funding, and was off and running.

uW - *How do you achieve balance in your life between your Harvard duties and your real estate development venture while in school?*

JP - Honestly, it has been difficult, and the tumultuous economy has only had an amplifying effect. Without question, running the project from half-way across the country has been the trickiest aspect of being in school. Modern communication technology helps tremendously, yet you are forced to give up a certain amount of control and become reliant on others to provide you with information on a day-to-day basis. Thankfully, I have a capable and trusted local team in place to handle issues as they arise. I should mention that no active construction was underway while I have been in school. Had a new phase been under construction, there is no way I could have devoted the time necessary to my academic commitments. It is also important to note that whenever an important issue came up, I always made an effort to hop on a plane and get back for a face-to-face meeting, even if the meeting only lasted for 30 minutes. Being there in person conveys the message that the project is your most important priority.

uW - *Are you predicting you will continue in your path as a real estate developer? Has your time spent at Harvard had any influence on these decisions? If so, how?*

JP - Development, by its very nature, calls on you to wear numerous hats. No two days are the same, which has been one of the most enjoyable aspects of it for me. I love the creative and problem-solving nature of the development process, so I do see myself continuing to be involved in development on some level. As I mentioned earlier, my time at Harvard

has also opened my eyes to many other opportunities in the real estate industry. I can definitely envision myself becoming more involved with the investment side of the business in the future.

uW - *What is your definition of success? Do you feel your company has achieved this?*

JP - This might sound cliché, but I think success means waking up every day feeling excited about getting to work. If you can harness this, riches in your business life will follow. Too many people fall into the trap of spending their entire lives doing work they are not passionate about. While things have not always gone smoothly, I can honestly say not one day spent on Cobblestone Creek has felt like work.

From a business standpoint, I wanted to set a new standard for residential development in the area. Without a doubt, I believe I have achieved that. Now, if I measure success as meeting or exceeding a pro forma return, the company has not been successful due to the collapse in housing. Everything is being done to bring this back as the economy recovers, so I feel the success story has yet to be written.

PROJECTS

uW - *How has the current recession impacted your project?*

JP - There is no doubt the recession precipitated the need for a radical rethinking of project strategy. The local residential market began grinding to a halt in the summer of 2008. A typical year will see dozens of single-family building permits pulled, more when a new subdivision comes online. In 2009, you could count the number of permits on one hand. The supply of new listings coming onto the market is outpacing sales by a factor of three, with average days on

the market approaching record highs for the area. Qualified buyers can still obtain financing, but are simply unable to sell their existing homes. The market basically is frozen. People are staying put, doing remodeling projects, and waiting to make a move until there is more economic certainty.

uW - *What measures have you taken during the current economic downturn to "weather the storm"?*

JP - It goes without saying that, given local market conditions and the broader financial crisis, all construction activity has stopped. The worst thing that could happen is for the community to begin thinking the project is "dead in the water." To that end, I have continued doing small landscaping projects, partnering with builders to market spec units, and doing a 10% price reduction going into the building season in an effort to pique interest. Beyond that, it becomes a matter of simply waiting for conditions to improve.

As an aside, I have made a special effort to keep my equity partners and bankers informed at every turn. Obviously, in a time of so much uncertainty, everyone is on edge. Even in the best of times, no one likes surprises, and they appreciate being fully conversant in project specifics given the market.

uW - *What is the current status of your project? What phases of development are you working on currently? Are you moving forward?*

JP - The first phase of the project (14 lots) is complete and ready for home construction. As previously mentioned, progress on future phases is on hold until market conditions improve. Clearly, this is frustrating for everyone involved. The most foolish thing one could possibly do however, is try to force the market. I have considered branching out into spec

building to keep the momentum going, but this would unnecessarily, and unwisely, put another layer of risk on the project given the lackluster market. The subdivision was planned and zoned for single-family, detached units only. Nevertheless, as the market for townhomes is still relatively strong, I am giving serious consideration to seeking a rezoning for several lots, although a rezoning is not without issue. If done properly, these homes can fit the overall design aesthetic of the project. Remaining flexible, being creative, and coming at problems from different angles are imperative during troubled times.

uW - *Please identify what you consider your project's competitive edge?*

JP - Hands down, the site itself is Cobblestone Creek's competitive edge. The development sits in a valley with bluffs rising around it. Also, there is a beautiful spring-fed creek that bisects the property and abuts many of the lots. Unlike competing subdivisions, particular attention was paid to the existing vegetation and topography. Rather than clearcutting and mass grading the entire site, the streets follow the terrain and native plant life was left intact. While the project is unique in the area due to the numerous environmentally-sustainable features it incorporates, most buyers place very little value on them when making a buying decision. Access is also important. Competing projects are located on the top of a bluff, which necessitates a rather unnerving drive, especially in the winter. Cobblestone Creek is easily accessed from a wide, sparsely-traveled, and well-maintained county highway.

uW - *What market are you serving? How has your product addressed that target market?*

JP - The development is targeted toward middle-to-upper-income families. From a

planning standpoint, this fits well with the surrounding land uses and, quite frankly, is the only demographic able to afford the purchase prices based on the land costs in the area. These buyers typically are looking for larger lots with no neighbors to the rear. They also tend to place a premium on lots that can accommodate house plans for rear or side walk-outs. The site plan for the subdivision was drafted with an emphasis on these elements. Interestingly enough, I went into the project expecting families who had outgrown their existing homes to be my target audience. As it turns out, a majority of prospects have been couples nearing retirement who are looking to downsize and move or build for the last time.

uW - *How do you go about marketing your project/business? What has been your most-successful marketing strategy?*

JP - Due to a great deal of media coverage during the entitlement process, anyone planning to build a new home was aware of the project. Additionally, I erected temporary signage as soon as construction began. As I did not have sales and marketing expertise, I entered into a listing agreement with Coldwell Banker to gain exposure on the Multiple Listing Service (MLS) and to tap into their other marketing resources. The most effective forms of project advertising have been on-site brochures, the internet, and open houses; however, nothing can compete with spending time with potential buyers. People generally lack vision and imagination, so being able to "show and tell" while standing on a lot is extremely important. Contrary to what I initially expected, print ads in newspapers and real estate publications have generated few fruitful leads. ■

COBBLESTONE CREEK

A trout stream runs through the 270-acre site, where 90 residential lots are laid out. Approximately 220 acres of the site will be set aside as open space. The conservation subdivision design principles were used to first identify land areas to be preserved, such as the trout stream and its riparian buffer zone, steep slopes, bluffs and bluff tops, groundwater springs, wetlands, and mature woodlands. Construction of Phase 1 started in 2008. The site design ensures that:

- Every home backs up on greenspace
- Interconnected park space allows for an extensive casual trail system and wildlife corridors
- Everyone has access to the bluff tops, the springs, and the stream
- The natural areas around the springs are preserved and protected
- Narrow streets and bump-out parking will reduce impervious surfaces to reduce the volume of stormwater runoff (pollution prevention)
- An extensive above-ground stormwater management system will facilitate storm water infiltration and increase the base flow of cool water to the stream
- Steep slopes are protected
- Narrow lots and shallow front setbacks will reduce the amount of impervious surfaces and reduce the ground disturbance necessary

PROJECT DATA

LOCATION: Winona, Minnesota

PARCEL SIZE: 270 Acres, However Only 50 Acres Are to be Developed and the Remaining 220 Acres Are to be Preserved

UNIT TYPE: 90 Single-Family Suburban Homes

LOT SIZE: 0.55 Acre Per Lot (24,000 sq. ft.)

PRICE: \$465K - \$595K

PROJECT FEATURES: Low-Impact Design Makes it Possible to Preserve and Restore the Site's Unique Natural Assets



Subdivision Master Plan



Preserved Creek



Sustainable Stormwater Runoff

Student + Developer

NAME:

Kevin Wronske

SCHOOL:

Harvard Graduate School of Design

DEGREE:

MDesS Real Estate & Project Management, 2010



GENERAL ADVICE

uW - *If you could give a Harvard student planning to move into the real estate development profession three pieces of advice, what would they be?*

KW - 1) Be an expert at something. Wanting to 'do a deal' or 'be a developer' is simply not enough. Find a niche, become an expert, and use that knowledge as your sweat equity and competitive advantage.

2) Ask yourself if you would sign recourse on the deal. If not, there is a problem, and you are putting someone at risk.

3) Be patient. All the big guns come by Harvard. So it is easy to see John Portman lecture and get all excited about building the next Peachtree Center. It's not going to happen overnight, so don't be afraid to start small and grow.

CAREER PATH

uW - *When did you start thinking of starting your own firm? When was your first project? Have you completed any projects to date?*

KW - I started my own firm right after college. Back then, you could do no wrong and they were giving loans to anyone, including me! That was 2002. Now I've finished 4 of my own ground-up projects and numerous other client-sponsored projects. I worked harder on the first project than I ever have in my life.

uW - *What is the start-up story behind your real estate business venture?*

KW - I had finished architecture school and didn't want to be a whipping boy at the bottom of the totem pole. As I said previously, it was 2002 and banks were throwing money at people. I took a cushy day job at a museum and drew plans at night. I felt like I was doing something illegal: I was 24 years old, borrowing \$400K from a bank based on some convoluted plans I drew up in my kitchen at night. Fortunately, that first project worked, and everything has snowballed since then.

uW - *How do you achieve balance in your life between your Harvard duties and your real estate development venture while in school?*

KW - Finding balance was tough. When I started Harvard in 2007, I arranged my schedule not to have classes on Monday or Friday, so I could fly back to L.A. every few weeks to tend to business. I took the next year off when work got busy, then returned for a 6-week half semester to earn another four credits, then took another semester to earn my last four credits, essentially turning a three-semester program into a three-year program. The administration has been extremely supportive, and I got to meet twice as many people.

uW - *What project or developer do you admire the most? Why?*

KW - SHoP Architects have a really nice business model that results in fantastic

work. They really balance architecture, construction, and development and push innovation on all three fronts. They aren't afraid to say profit is important as well as good design, they aren't mutually exclusive.

uW - *What is your definition of success? Do you feel your company has achieved this?*

KW - This sounds cheesy, but my goal with my first project was simply to build something I was proud of. You know, something you can take your friends and family by and say this is what I'm adding to the world. It isn't all about IRRs and it isn't all about design. Success is measured on the triple bottom line. My latest project achieved >30% IRR, is the lowest-cost LEED Platinum project in Los Angeles, and provided homes for more than 30 persons, and employed in excess of 100 persons.

uW - *Building on the previous question, what would you like to work on to be able to achieve your future goals?*

KW - Again, this sounds a little cheesy, but it is about sleeping at night. As a developer, you have responsibilities to so many people. Fiduciary, financial, environmental, design, safety, public, private, payroll, insurance, agencies, etc. So you're constantly balancing all these people and aspects, and they all think they're the only ones that matter. So, again, success in a general sense is just being responsible for how you are affecting the environment on all fronts.

PROJECTS

uW - *Please talk a little bit about your capital sources. Where did your funding/capital come from? Did you secure it before or after the current market downturn? How did you go about getting it?*

KW - Financing was secured during the

meltdown, when everyday the headline was absolute doom and gloom concerning residential construction. The LTV (loan-to-value) kept dropping: it started at 85%, and ended up at 65%, so we had to keep sourcing additional equity. We had put in 50% of the land cash (about \$600K), which we were about to lose every time the bank balked. In the end, we hired a mortgage broker, and luckily had a couple of equity partners who believed in us.

uW - *How has the current recession impacted your project?*

KW - First, we lost a different project to foreclosure. Then, as the LTV ratio was dropping on this project, our profit was getting transferred to the equity partners as their risk increased. Also, the bank required us to build in two stages, with the second stage starting only after five homes from the first stage were in escrow. This obviously delayed the construction and increased financing costs. We are currently building a project with 100% equity and no debt, since the banks are so backward. In eight years of business, we have always met or exceeded our investor return expectations.

uW - *Please briefly describe the following:*

- 1) *Business model*
- 2) *Underwriting assumptions*
- 3) *Projected returns and IRR*
- 4) *Exit strategy (if any)*
- 5) *Partners (if any)*

KW - 1) Business model: vertically integrated to be more efficient than any other firm. Stay small, in the trenches, and know everything about each project. It is slow, stressful, and effective.

2) Underwriting assumptions: cost to build = \$160/sq. ft.; sale price: \$375/sq. ft.; project timeline = 8 months for entitlements and 10 months in construction.

3) Project returns and IRR: this project achieved a 60% ROI and >30% IRR.

4) Exit strategy: file bankruptcy and move to Mexico. Only half-joking.

5) Partners: no formal partners, several recurring equity investors. Good relationships with two banks. A good mortgage broker who frequently invests personal funds.

uW - *What is the current status of your project? What phases of development are you working on currently? Are you moving forward?*

KW - The project was complete as of February 2010. I currently have one other project under construction, another one in the entitlement process, and would like to secure at least two more pieces of land. Due to the success of this project, I get a lot of other developers stopping by pretending they are buyers and stealing ideas, so unfortunately this market will be diluted soon.

uW - *Please identify what you consider your project's competitive edge?*

KW - The competitive advantage for this project is that its sum is greater than its parts. There are other small-lot subdivisions, other green homes, and other contemporary designs, but none put them all together at a price that is the median for the area. By being vertically integrated and maintaining so much control, we are able to execute our concepts without the project getting diluted and value engineered as it is developed.

uW - *What market are you serving? How has your product addressed that target market?*

KW - I serve a very small niche market. They are young professionals with an eye for design. I always try to keep my product aligned with my personal inter-

ests. When I was twenty-four and building my first project, it rented to similar young adults. Now I'm thirty-three, and building homes for first-time buyers similar to myself. In a way, this is making a spec home into a custom home, because I am essentially designing for myself. It takes a lot of the guesswork, *i.e.*, risk, out of spec building.

uW - *How do you go about marketing your project/business? What has been your most-successful marketing strategy?*

KW - For the first few years, I didn't market at all, which was a huge mistake. Now I sit on juries and lecture at Sci-ARC and USC, blog about all my projects on my website, have an interest list with 700 subscribers, and this project was published in everything from the *LA Times* to *The Architect's Newspaper*. I spent about \$40K on marketing for this project (all graphics and printing done in-house) and had an opening party attended by about 500 people. The most successful strategy is tapping into another network: RSS feeds on the blogs', the local news with about four million viewers unexpectedly coming to the opening party; and the Korean taco truck that came has 1,300 followers on Twitter, *etc.* ■

ROCK ROW

This fifteen-home project went on the market at the bottom of the worst real estate cycle in history (March 2009). It sold out in one month. The homes are an array of five different floor plans, ranging from 1,310 sq. ft. to 1,600 sq. ft. The homes achieved LEED Platinum certification, the least expensive homes in Los Angeles to do so. The homes are single-family residences using the Small Lot Ordinance, which is a new housing typology similar to the townhome, which serves as an alternative to condominiums. The project has been widely published and is a *Los Angeles Times* "Home of the Week."

PROJECT DATA

LOCATION: Los Angeles, California
 PARCEL SIZE: Approx. 1 Acre
 UNIT TYPE: 15 Single-Family Homes
 UNIT SIZE: 5 Different Unit Plans 1,310 - 1,600 sq. ft.
 PRICE: \$465K - \$595K
 FEATURES: LEED Platinum Certified

FINANCIAL SNAPSHOT

LAND COST: \$1.2M
 BUDGET: \$5.9M
 ACTUAL COST: \$6.0M
 DEBT: \$3.9M
 EQUITY: \$2.0M
 PRO FORMA IRR: 2.5%/Month - 33% Annual
 ACTUAL IRR: 2.8%/Month
 ROI: 60%
 WATERFALL: 50/50 to 2.5% Month
 60/40 > 2.6%
 90/10 > 2.7%



Exterior Photo



View from Kitchen



View from Private Patio



Kitchen and Dining Room



Exterior View of Main Entrance to One Unit



3-D Model of Development



Internal Street Rendering

HOUSING POLICY

Federally Sponsored Public/Private Partnerships: A New Solution to Tackling the Persistent Crisis of Affordable Housing

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To incentivize the redevelopment of underutilized and distressed parcels, a federal land bank program is proposed to assemble parcels to be ground-leased to developers, administer the solicitation of development proposals, and provide capital market subsidies to expand the availability of below-market rate construction and permanent debt.

Previous attempts to substantially increase the affordable housing stock in the United States have achieved varied measures of success, but ultimately have failed to fix the shortage of affordable housing in the United States. At the dawn of this century, one in four American households spent more than thirty percent of income (the long-standing federal government benchmark for housing affordability) on housing.¹ Since the issue of affordable housing entered the forefront of the nation's consciousness in the Great Depression, both public and private actors have made various attempts to create an effective affordable housing model. If the current administration is serious about addressing the shortage of affordable housing, then piecemeal reform must be abandoned and an entirely new strategy should be adopted. Given the growing dissatisfaction among the public with voluminous and expensive federal legislation, the most successful strategy will be one that combines the power of the federal government with the ingenuity and efficiency of the free market in the form of public/private partnerships.

ANALYSIS

Neither the public nor the private sector has all of the requisite strengths necessary to substantially increase the stock of affordable housing; however, the establishment of a new public/private partnership program would allow the current administration to harness the respective strengths of the public and private sectors to rectify shortages of affordable housing.

I. THE RESPECTIVE STRENGTHS AND WEAKNESSES OF THE PUBLIC AND PRIVATE SECTORS

A. THE PUBLIC SECTOR: The federal government's two vital strengths are its regulatory power and its capacity to finance large-scale initiatives. The regulatory power permits the federal government, either through traditionally-enacted congressional legislation or executive agency rulemaking, to change the proverbial rules of the game.² No entity or sovereign has as much power as the federal government to create the legal framework, pre-empt burdensome state and local laws, and/or exert control over the free market. Additionally, the federal government has an unparalleled funding mechanism that can invest in and serve as guarantor of large-scale construction projects and social programs.³ No entity has as much power to provide large-scale, low-interest investment in affordable housing as the federal government.

The federal government's great strengths must be measured and balanced against its Achilles' heel: government action requires political will and public funding. For any of the government's many powers to be utilized, the requisite political will must be present. Political will, in its truest form, is the consequence of a cultural movement that pushes public

sentiment to favor change in a realm where either no laws, inadequate laws, or the wrong laws exist, thereby requiring a legislative body to create laws accurately reflecting the public sentiment. With regard to affordable housing, the public sentiment may not be strong enough to generate the necessary force among federal lawmakers to create broad-sweeping legislation.⁴ Without political will it may be difficult, if not impossible, to earmark the federal funding necessary to completely solve the affordable housing issue. It will likely become increasingly difficult for the current administration, or any future administration, to pay for large-scale policy initiatives, especially when it has already identified other policy priorities such as health care reform, foreign wars, and climate legislation. Moreover, growing political concerns over public debt and the scope of government intervention further complicate the process of federal attempts to launch a new affordable housing policy initiative.

B. THE PRIVATE SECTOR: The private sector's greatest strength is its ability to efficiently allocate capital and resources: (i) investments are chosen and allocated by rate of return rather than political will; (ii) private investment, rather than taxpayer dollars, is the key source of financing projects; (iii) the profit motive stimulates greater efficiency and innovation; and (iv) private investment creates private sector jobs and stimulates economic growth. But when it comes to affordable housing, the private sector's focus on profit leads to an underinvestment in the overall social good. The cost of constructing housing in the United States has essentially made the phrase "private sector affordable housing" a contradiction in terms.

A public/private partnership system can address three factors that impact

the cost of housing construction: (i) land costs; (ii) the public approvals process; and (iii) the availability and carrying cost of debt.⁵ The cost of land is so significant that it often constitutes a barrier to entry for many developers seeking to construct market-rate housing, let alone affordable housing. This is especially true in metropolitan areas of the East and West Coasts. Even if land can be obtained affordably, the public approvals process may create an obstacle to the construction of affordable housing. The public approvals process imposes a layer of legal complexity on the development process that increases costs and adds to the difficulty of making affordable housing a financially viable option. Even if the costs are palatable, “exclusionary zoning” may be used to stop the development of affordable housing. This has become common in many suburban communities across the nation.⁶ Finally, financing is another factor that has increased the cost and difficulty of constructing affordable housing. The cost of servicing debt on the construction and operation of a real estate project has always been a predominant factor in calculating the success or failure of that project. With affordable housing, meeting the debt service requirement is made even more difficult since the revenues received are lower than with a market-rate project. Moreover, deteriorating credit markets and hesitant financial institutions have essentially brought new home construction to a halt, thereby making it tremendously difficult for affordable housing developments to utilize any sort of private financing mechanism, much less find the appropriate financing to achieve solvency.

The most likely scenario for successfully addressing these three obstacles lies in combining the respective strengths of the public and private

sectors in the form of public/private partnerships. The collective force of the public/private partnership can harness the regulatory and pecuniary power of the federal government, and the human capital and ingenuity of the private sector, to create an environment in which a substantial increase in the nation’s affordable housing stock can become a reality.

II. OPPORTUNITIES FOUND IN THE CURRENT REAL ESTATE CRISIS

As former White House Chief of Staff Rahm Emanuel infamously declared in 2008, “Never allow a crisis to go to waste.”⁷ The current real estate crisis has left banks broken, developers and builders bankrupt, and millions of homeowners burdened with the devastating impact of foreclosure. Residential and commercial real estate prices have receded from the peaks reached a few years earlier and it could be years before either the residential or commercial markets make a complete recovery.

Nevertheless, the crisis has also brought with it opportunities that were unavailable a few years earlier. Lower prices, the abundance of distressed properties, the growing number of abandoned or unsold residential units, and the unavailability of credit have collectively put buyers in a position to acquire real estate assets at a fraction of what those assets were acquired for just three short years ago. The crisis presents the federal government with an opportunity to acquire abandoned, distressed, and unsold assets, along with cheaper raw land, and to partner with private developers to construct affordable housing on that land. Acquiring cheap real estate assets will not only benefit Americans that need affordable housing, but will also benefit the communities and property owners that are suffering as a result of the glut of available property. More-

over, the federal government's acquisition of property for use in public/private affordable housing partnerships could be as much of a stimulus to the entire real estate sector as any other measure taken since the onset of this crisis.

III. THE PUBLIC/PRIVATE PARTNERSHIP PROGRAM ILLUSTRATED

A public/private partnership program could provide an advantageous means of harnessing the respective powers of the public and private sectors to seize the opportunity presented by the real estate crisis to create a new, enduring program to resolve the affordable housing crisis. The program, and its underlying legislation, can be structured in countless ways and contain a myriad of variations regarding purchase, financing, and development requirements. Below is one way the program could be structured to meet the affordable housing crisis head on.

First and foremost, Congress should pass enabling legislation that would create a nationwide public/private partnership program. The enabling legislation would use the Department of Housing and Urban Development (HUD) and the real estate division of the General Services Administration (GSA) to charter and operate a federal land bank⁸ through which the federal government can purchase, assemble, and prepare distressed and abandoned parcels for the development and operation of affordable housing units by the private sector. Purchasing and preparing thousands of parcels for development is a massive task, the cost of which could easily spiral out of control given the involvement of multiple federal agencies. It is therefore necessary to clearly define the role of each agency, utilize each agency's existing resources to carry out the program, and monitor costs carefully as parcels are deposited into HUD's land bank.

The enabling legislation would regulate the deposit of parcels into the land bank as follows:

1. A maximum limit on parcels and/or acreage to be purchased by HUD and deposited into the land bank would be delineated for each of the fifty states, with a certain minimum percentage of the purchased parcels to be located in urban or populous areas. HUD would be empowered to purchase parcels so long as the maximum limit is not exceeded in any state.
2. Although not required, HUD would be encouraged to purchase parcels owned by other federal agencies, municipally owned and underutilized parcels, distressed parcels, and parcels currently in foreclosure (in order to minimize the cost of acquiring these parcels). The statute would discourage, but not preclude, the assembly of parcels through eminent domain.⁹
3. The parcels can either be raw land or can possess existing structures identified for demolition.

After HUD has purchased parcels through the land bank, it would coordinate with the GSA and the Environmental Protection Agency (EPA) to make sure all conditions have been met for the commencement of multi-family residential housing development. The enabling legislation would require GSA to coordinate with state and local authorities regarding legal or regulatory issues affecting each parcel. Normally, the process of obtaining zoning approvals and special use permits can be taxing and time-consuming, but the enabling legislation would pre-empt local zoning regulations, thereby excising these complications.¹⁰

Since the National Environmental Policy Act of 1969 would require environmental impact statements for any land purchase by the HUD land bank,

the EPA will work with HUD to assess the environmental impact of each site, develop an acceptable environmental impact statement, and identify ways to improve the sustainability of each site.¹¹ For any contaminated site, the EPA would spearhead remediation efforts to prepare the parcel for redevelopment.

Once the parcel is suitable for development, the enabling legislation will provide for the conveyance and development of the parcels as follows:

- 1.** Developers can apply to HUD through an RFQ/RFP process by which developers will specifically propose the construction and operation of multi-family residential rental units.
- 2.** The proposals must meet two threshold standards stipulated by HUD:
 - a.** A minimum number of units-per-acre standard, which would be established to promote development density and could vary greatly depending upon the location of the parcel; and
 - b.** The minimum percentage of affordable housing units in the development should be no lower than 40%. An upper limit on affordable units could also be established, which could improve the attractiveness to the private sector by allowing for market-rate units, and could also benefit affordable housing tenants by offering the opportunity to live in a mixed-income community.¹²
- 3.** Once approved, HUD would execute a ground lease whereby the parcel is leased to a single purpose entity ("SPE") formed by the developer for a period of fifty years.¹³ The use of an SPE is important for three reasons: first, it provides for orderly accounting of all income and expenses incurred in the development; second, it protects

the asset within the SPE from the developer's other liabilities; and third, it improves the ability of the federal government to recover the asset in case of developer default. The leased fee would be below market rate, thereby reducing the cost of the raw land to the developer. The lease would require the developer to construct and operate residential rental units in accordance with terms and conditions set forth by HUD (including, but not limited to, the two threshold standards set forth above).

- 4.** The developer could then apply for construction financing through the Federal National Mortgage Association (FNMA). FNMA would provide developers participating in the public/private partnership with below-market-rate construction loans. For example the loans could bear interest rates equivalent to the applicable federal rate for mid-term loans, which as of June 2010 was 2.72% compounded annually.¹⁴ The loan-to-value (LTV) ratio should not exceed 95% of the value of the completed residential buildings.

Upon the completion of construction of the development, the enabling legislation would require the developer to satisfy the construction loan by obtaining permanent financing with an institutional lender willing to participate in the public/private partnership program. The lender must provide permanent financing for a term of at least thirty years at a fixed interest rate set regularly by the federal government below then-prevailing market rates. In return for the lender's agreement to offer financing at below-market rates, the federal government will offer the following incentives to the lender: (i) federal guaranty of repayment; (ii) relief from income tax liability associated with the loan; and (iii) an annual, pre-determined tax credit the value of which would depend on the loan's size.

Since the parcels held in HUD's land bank and leased to developers will be owned by the federal government, those parcels will not be subject to local property taxes; however, the federal government and the developer can better ingratiate themselves with their local communities by making Payments in Lieu of Taxes (PILOT payments) to the communities. PILOT payments can be furnished by the federal government and, depending on the cash flow analysis prepared on a development-by-development basis, some cost of the PILOT payments may be passed onto developers. Utilizing a PILOT payment program in connection with the HUD land bank could provide an income stream for local communities and increase the willingness of communities to support this new federal housing policy.

The enabling legislation should also recognize that during the operational life of a development created under the public/private partnership, sale of the units to the occupants might become an attractive option for both the tenants and the developers leasing the units. Therefore, the enabling legislation should provide opportunities for condominium conversion once any development in the program reaches a certain age. Unless condominium conversion occurs, upon the expiration of the lease, the parcel and the development situated thereon generally will be returned to the HUD land bank. Alternatively, HUD may renegotiate its lease with the developer, sell the parcel to a non-profit agency, or take other action consistent with the scope and purpose of the enabling legislation.

IV. CONCLUSION

The program framework and the specific incentives described above can certainly be modified to provide a prospective developer with sufficient, but not excessive, financial incentive to create a mixed-income housing develop-

ment within the confines of the program. In fact, the best program would be one where there is room for use of various incentives based on the discounted cash flow analysis prepared for each proposed development in order to properly motivate the developer without placing too-significant of a burden on the federal government.

The use of federally sponsored public/private partnerships, as described above, could substantially increase the quantity of affordable housing in the United States within the next decade. More importantly, the collective strength of these partnerships could increase the quality of affordable housing. The enabling legislation harnesses the federal government's strength as regulator and financier to address the costs and quality of housing development. The participation of the private sector allows it to assume developmental, operational, and permanent financing functions, thereby reducing the federal government's involvement and minimizing the political will and public funding required for the enactment and operation of the program. The enabling legislation, by addressing and targeting the factors contributing to the increase in housing development costs, would decrease the cost of development and operation so that developers can provide affordable housing and still realize a profit. The financial incentives, loan guarantees, and goodwill that lenders would receive from participating in these partnerships would provide ample reason for their involvement.

Assessing the totality of the enabling legislation and the public/private partnerships, it is clear that a diverse set of stakeholders have much to gain from participating in such a program. Much of the nation's affordable housing thus far has been created by altruistic individuals and organizations; however, when

stakeholders realize that they can actually gain from a program such as this, their newfound willingness to participate will be the key catalyst in substantially increasing the nation's affordable housing stock. ■

ENDNOTES

1. *Meeting our Nation's Housing Challenges: The Report of Bipartisan Millennial Housing Commission*, (May 30, 2002), 2, <http://govinfo.library.unt.edu/mhc/MHCReport.pdf>.

2. This power of the federal government to enact legislation is limited by the United States Constitution. The Commerce Clause, found in Article I, Section 8 of the United States Constitution, empowers the United States Congress to "regulate Commerce ... among the several States ..." This clause has been steadfastly interpreted by the United States Supreme Court as providing Congress with the explicit authority to regulate interstate commerce. Given the vast array of inputs required to construct housing developments, it can safely be assumed that housing is an activity of interstate commerce, which Congress can regulate.

3. The federal government's power to fund (i.e., to tax and spend) is found in the first clause of Article I, Section 8 of the United States Constitution.

4. It may be important here to note that most Americans would likely agree that adequate and affordable housing is an important social and political concern; however, the issue of affordable housing is not necessarily perceived as a crisis by a sufficient percentage of Americans, and therefore, the issue has not reached critical mass in the social, cultural, or political spheres.

5. Labor and material costs are additional factors contributing to the cost of housing construction, but a public/private partnership has much less, if any, ability to impact these costs.

6. See *S. Burlington County NAACP v. Twp. of Mt. Laurel*, 336 A.2d 713 (N.J. 1975). This case is a prime example of the damag-

ing effects exclusionary zoning can have on a community's affordable housing stock.

7. http://www.newsweek.com/id/228951?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+headlines%2Fhealth+%28Updated+-+Headline+Feed+-+Health%29

8. For an informative look on how land banks are being utilized to address the foreclosure crisis, see *Revitalizing Foreclosed Properties with Land Banks*, U.S. Department of Housing and Urban Development, Office of Policy Development & Research, August 2009.

9. Any use of eminent domain by the federal government would require the payment of "just compensation," as is required by the Fifth Amendment of the United State Constitution. The eminent domain process is not only expensive, but also politically sensitive, and should be avoided at all costs.

10. The United States Congress may adopt laws that explicitly pre-empt state or local laws, thereby precluding the applicability of the state and local laws pre-empted. *Pac. Gas & Elec. Co. v. State Energy Res. Conservation and Dev. Comm'n*, 461 U.S. 190, 203–204 (1983).

11. National Environmental Policy Act of 1969, 42 U.S.C. § 4321, et seq.

12. For the purposes of determining whether the developer is meeting the threshold for affordable housing units, affordable housing is defined as housing available at 30% of gross income for those earning 80% or less of the median income in their metropolitan area.

13. The single purpose entity will most likely be organized as a limited liability company and will permit both the federal government and developer to more easily track financial and operational performance of the entity for the purpose of awarding incentives and determining compliance with the ground lease.

14. The applicable federal interest rates are published by the Internal Revenue Service and can be found at <http://www.irs.gov/pub/irs-drop/rr-10-15.pdf>.

HOUSING POLICY

Municipal Government: The Next Master Developer?

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After experiencing decades of disinvestment and deterioration, the city of Augusta, Georgia is piloting a new, largely locally-funded program through which the municipality will oversee the entire planning and redevelopment process in two distressed neighborhoods. The city of Augusta intends to attract private investment by eliminating assembly and entitlement risk and issuing revenue bonds to fund initial phases of the revitalization.

AUGUSTA CITY LEADERS... AND MASTER DEVELOPERS

For the past two decades, the Bethlehem and Laney-Walker neighborhoods of Augusta, Georgia have exemplified the downfall of once-vibrant central cities. In Bethlehem, the central city has languished with 70% of the total building stock in a state of deterioration; Laney-Walker does not lag far behind at a figure closer to 30%, which is rapidly increasing. Both neighborhoods were victims of a societal transformation that wrecked many inner-city communities in the second half of the 20th century. Many middle- and upper-class residents moved outward to the suburbs, leaving two communities that struggled to cope. The exodus seems to have been spurred by the transformation of workforce patterns as employers left nearby downtown Augusta to set up along interstate highways at the urban edge. The resultant landscape festered in a state of perpetual disinvestment as private market developers and investors turned away from these central-city neighborhoods deemed too risky, and many of the public programs failed to keep pace with the rapid rate of decline. The situation was emblematic of inner cities' difficulties

HOUSING POLICY

around the country. Augusta, however, now promises to transform Bethlehem and Laney-Walker based on a local, integrated method of urban revitalization, which the city's housing department has called a 'one-of-a-kind' approach.

In the past, cities embarking upon large-scale urban revitalization and real estate development projects have relied heavily on federal funding. The arguably successful federal housing programs of the last half-century – Model Cities, Hope VI, and Community Development Block Grants – were subject to both federal funding and control. In today's landscape, projects have gradually shifted toward greater local control and funding sources. Starting with President Clinton's speech circa 1995, where he famously declared, "The days of made-in-Washington solutions, dictated by a distant government are gone. Indeed, solutions must be locally crafted, and implemented by entrepreneurial public

entities, private actors, and a growing network of community-based firms and organizations."¹

In Augusta, Georgia city leaders have taken Clinton's statement to heart as they have embarked upon one of the most ambitious locally-funded urban neighborhood revitalization plans in memory. It consists of novel funding streams and project organization that sets it apart from past urban "renewals."

In an interview, Hawthorne Welcher, Jr., the Assistant Director of Housing in Augusta, outlined an integral shift in how the urban redevelopment process will proceed. Traditionally, the role of the city in real estate development has been one of regulation, zoning, approvals, and typically master planning.² But seldom has the city played the role of master developer, too. In an attempt to slow growing sprawl and regenerate the decaying urban neighborhoods of Beth-

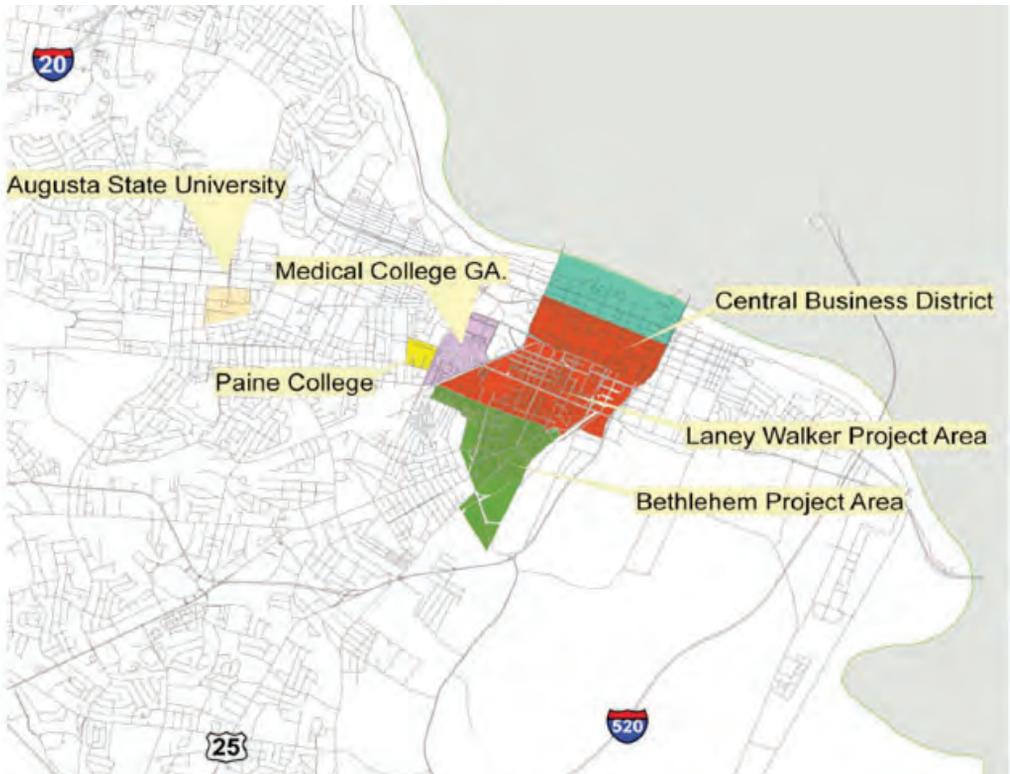


EXHIBIT 1 - Augusta, Georgia Context Map

lehem and Laney-Walker, Augusta city leaders decided to do just that.

WHY URBAN REAL ESTATE DEVELOPMENT LAGS GROWTH ON THE FRINGES

Much of the recent growth and investment in Augusta has occurred outside of the central city. Numerous theories and explanations seek to account for the prevalence of growing sprawl in American metropolises during the past two centuries. Some opine that an American cultural preference for the suburban aesthetic and lifestyle has driven real estate developers to concentrate on the fringes of cities in order to meet market demands. A more likely motivation may be that real estate developers and the primary consumers of real estate (businesses, homeowners, and renters) have viewed suburban greenfield development as a safer investment. In the context of the market economy, investors tend to base decisions on the investment vehicle's return on investment (bottom-line IRR) and the risk associated with a particular type of investment. Therefore, capital has a propensity to follow less risky investment paths if commensurate return performance can be achieved. Large-scale real estate development demands tremendous capital investments. The allocation of this capital among competing investment vehicles is as critical in determining how growth is distributed across metropolitan areas as other factors that govern where development occurs.

A report by the U.S. Census Bureau tracking residential development observed that although almost half of residential development firms were small (1-5 housing starts annually), small firms only accounted for approximately 10% of total housing starts.³ Thus, more than 90% of residential real estate development has been initiated by larger firms. As a consequence, these larger firms tend to control equally large develop-

ment projects that require substantial infusions of capital. As financial and capital markets in the United States have matured, allowing capital to be more readily allocated among development projects, the rate of suburban expansion has swelled. The census data compiled in 2000 indicated that suburban annual growth rates (1.3%) had outpaced urban annual growth rates (0.8%) in the previous decade. Since 2000, Columbia County, the suburban county outside of Augusta, saw its population swell by 29%. Augusta's Richmond County (which functions as a consolidated city-county government for Augusta and non-incorporated parts of Richmond County) remains nearly unchanged.⁴ This differential can be at least partially attributed to the inherent riskiness of the urban real estate development process (relative to the development process on metropolitan edges), which increases both time to completion and project costs. In urban environments, the challenge includes land acquisition and assembly of small parcels, the presence of countless watchdog organizations with competing missions, and sometimes a more protracted process for obtaining building permits. All of these factors make edge of city greenfield development more attractive.

Real estate development has traditionally consisted of master developers (also referred to as land developers)—who prepare sites for development by providing the necessary infrastructure, site improvements, and obtaining entitlements. Building developers profit by investing in and overseeing the construction of buildings on sites that have already been prepared for development by land developers. In suburban areas, the master developer of a large-scale project incurs the risks involved in guiding a proposal through the approvals process.⁵ The building developer's greatest remaining obstacle is whether or not the market will find his or her product desirable. Since the master developer has predetermined

the outcome and uses for adjacent properties, the building developer has less risk of external factors negatively affecting the value of his or her investment.⁶

On the other hand, in urban environments where large greenfield sites are rarer, there are many more potential pitfalls. Urban greyfield development, infill sites, or rehabilitation of existing building stock projects typically require some form of site clearance and remediation. Many times the entitlement process is more complex, increasing the overall timeline of a project from initial concept to completion. Moreover, the building developer has much less control over adjacent land use that could potentially undermine the value of investment, since there is no master developer. Financiers (whether they be lending institutions, pension funds, or private equity investors) weigh these disparities in risk and potential investment yield when determining where to allocate capital.⁷ Given the correspondingly greater risks of urban redevelopment, how can central cities expect to turn the tide against sprawl?

THE CITY AS MASTER DEVELOPER AND FINANCIER

Since the debacle of 1960s-style urban renewal, which in most cases exacerbated the ongoing center city exodus, there has been less impetus among city leaders to consider urban revitalization and development through neighborhood clearance. Instead, most projects and programs of more recent vintage, like the Community Development Block Grants Program, signed into law under President Ford, have been piecemeal attempts at improving urban housing and environments. The gradual evolution of public-private development (which has become increasingly prevalent) has culminated in a variety of collaborative approaches between public and private actors in real estate development with respect to the provision of land, financ-

ing, management of the project, and/or labor. Yet a new model for public-private real estate development in Augusta, Georgia may be game-changing.

In the ground-breaking text *Suburban Nation*, the authors observe the inherent inequalities in the development process that make central city neighborhoods less amenable to real estate development relative to suburban development. One of the authors' proposed solutions was that the city government itself should act as a master land developer, thereby minimizing the risks for building developers and stimulating the urban real estate market when other investors may have deemed it too risky initially. Hawthorne Welcher, Jr., the Assistant Director of Housing, in Augusta concurred in outlining the approach being pursued by his city. Speaking of the plan to redevelop several hundred acres of land in the deteriorated Bethlehem and Laney-Walker neighborhoods, Hawthorne explained, "The city is the master developer... Now, we aren't just funding the project [as the city has typically done with non-profits and CDCs], but we are involved in planning the whole redevelopment process from land acquisition to the time a particular house becomes occupied."⁸

In the past, many populous American cities, like New York and Boston, have relied on quasi-governmental development agencies (e.g., the New York Economic Development Corporation or the Boston Redevelopment Authority) to serve as the city's primary initiators of major public-led real estate development projects, but this model has not served medium and smaller cities that have less political capital needed to gain passage of special state charters to sanction these institutions. Nevertheless, Augusta, the second-largest metropolitan area in the state of Georgia, with a population of more than half a million residents, has initiated a strategy that involves collaboration between the city's Housing and

Community Development Department and private urban planning and real estate service consultants (under the aegis of Asset Property Disposition, Inc.). Together, this team will oversee substantial planning, land acquisition, site clearance, community outreach, and land development. Jesse Wiles, the president of APD, Inc., summarized the city's role. "Our major contribution to the deal is land."⁹

In effect, this partnership is in many ways analogous to the role of the typical greenfield master developer in the suburbs. But in a sense, the stakes are greater because the residential, low-density Bethlehem and Laney-Walker neighborhoods, in which the massive project is being implemented, suffer from a physical environment in which nearly 70% and 30%, respectively, of building stock was in poor, dilapidated, or deteriorated condition, in 2008.¹⁰

In December 2009, a county commission political impasse concerning the approval of one million dollars toward the project¹¹ that will eventually encompass 1,020 acres and nearly 3,500 parcels¹² was finally cleared. Over the next half-century, the project will be funded by a Special Local Option Sales Tax, a county-wide tax surcharge on hotels and lodging. The total of \$37.5 million will be leveraged with bonds and private development investment to transform the two neighborhoods over time.¹³ Jesse Wiles of APD, Inc. asserts that the foremost goal of these funds is to mitigate risks that would otherwise deter private investment.¹⁴

Besides the fact the city is acting as master developer, this project is also unique in that its major source of funding originates from local revenue, not federal funds. Unlike federal funds for large-scale neighborhood revitalization that were most common in the years preceding the Nixon administration, the use

of a special sales tax will provide more long-term funding stability, a key to assuring potential real estate development investors that any investment they make will be bolstered by a consistent flow of local public investment for the next half-century.¹⁵ Hotel and lodging taxes like this one have commonly been used to fund convention centers and other large public projects. The revenue streams thus are more predictable over time than federal fund allocations. As the purchasing power of allocated revenue diminishes over time, it is expected that a more robust private market and improved investment climate will offset the public development funds. Moreover, as the project gains momentum, this guarantee of constant public investment will placate financiers and spur a greater sustained private market reaction than the private market response to one-time and sporadic infusions of federal funds for neighborhood renewal in previous decades. Such predictability reduces risks and improves investment outlook.

The overall vision for the development area includes multiple housing types and land uses. The more prominent uses are single-family detached, for-sale units (with a mix of market-rate and affordable units). There are also plans for multi-family rental units and small neighborhood retail centers. According to Mr. Wiles, the for-sale units initially will be heavily subsidized, with government funding per housing unit tapering off over time as more units are sold. This graduated subsidy should serve to incentivize the pioneering homebuyers and tenants at the beginning of the multi-year development efforts.¹⁶

Development of a 22-parcel residential block is already underway in the Laney-Walker neighborhood, and the first houses are expected to be completed in the first months of 2010. Acquisition of land also is underway for a mixed-use development near the boundaries of the

Bethlehem and Laney-Walker neighborhoods, with schematic design work expected to begin by the summer of 2010. In 2008, the Asset Property Disposition, the project management team working in the interest of the city, brought a number



EXHIBIT 2 - Model House

of private building developers onto the project who will be paired with land and potential development projects as property is acquired and prepared for new development. Additionally, like a suburban subdivision developer, a marketing firm has been brought on board to promote the project as a cohesive development vision, not a patchwork of random investments.

It is too early to deem the redevelopment efforts in Augusta, Georgia a success. Nonetheless, the novel approach to large-scale neighborhood revitalization, in which the local municipality serves as master developer and supplies much of the initial development capital for land acquisition and subsidy of building costs, promises to change the way real estate development is implemented as local governments retain more responsibility for initiating redevelopment of their own city neighborhoods without significant federal assistance. ■

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HOUSING POLICY

Redefining the American Dream: Rethinking Homeownership after the Mortgage Market Nightmare

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In the past decade, the widespread availability of competitively-priced debt and federal tax subsidies made homeownership accessible to record numbers of Americans; but for many low- and moderate-income households, the total financial burden of ownership proved untenable, prompting the question: can America's housing needs be addressed more effectively by prioritizing the development and occupancy of quality, affordable rental units?

The concept that “everyone should own a home” historically has been perceived as an integral part of the “American Dream.” In 2003, Fannie Mae conducted a National Housing Survey in which 65% of respondents cited the “American Dream” as a major reason for buying a home and 74% said they believe “owning something of your very own” is a reason to buy a home. This socially-entrenched and almost-pathological devotion to universal homeownership seemed to be becoming an attainable reality for millions of Americans, who benefited from relaxed mortgage standards and easy access to credit during the decade-long housing boom from the mid-1990s to the mid-2000s. U.S. homeownership rates rose to a historical high of 69% in

Proliferation of Homeownership in the U.S.

- From 1965 to 1995, homeownership rates in the U.S. generally were static.
- By the early 2000s, the number of Americans aspiring to homeownership had more than doubled according to Mark Zandi (see note 1).
- 66.2% of Americans owned their homes according to the 2000 Census, whereas the corresponding rate in Switzerland was only 34.6%.
- As a result, Robert Shiller, the noted real estate economist who created the Standard & Poor's/Case-Shiller Home Price Index, found that real home prices in the United States increased by 85% between 1997 and the 2006 housing market peak (as reported in the Federal Reserve Board's Flow of Funds).

2005¹ and the aggregate value of ownership in U.S. residential real estate rose to over \$22 trillion at the market peak in 2006.² As we are now painfully aware, these record housing numbers were built on shaky foundations; the housing markets finally woke-up to the reality of irrationally overvalued home prices and unsustainable mortgage debts³ that led to the inexorable slide into the housing crisis and the greater financial crisis. Nationally the housing price-to-rent ratio reached an all-time peak of 25 at the end of 2005. To put this in perspective, the average ratio in the preceding quarter of a century was 16.5, with a low of 12.5 during the mid-1980s. Almost three years later, the recovery of the housing sector and future of the mortgage markets is still uncertain. As we begin to understand what went wrong and consider how to rebuild, a basic question that deserves consideration is whether the basic political and social conceptions of housing in the United States need to be reconsidered.

American Mortgage Indebtedness

- In 2006, Americans owed more than \$10 trillion in mortgage debt; homeowner equity was estimated at about \$12 trillion.
- Mark Zandi cites that the average American family spends 33% of its income on housing, inclusive of mortgage payment, property taxes, heating, and furniture. "By comparison, households in New Zealand devote a fourth of their budget to housing. For French households, it's a fifth, and only a seventh for the Japanese and Koreans."

THE HISTORY OF HOMEOWNERSHIP: A "SACRED COW IN AMERICAN SOCIETY?"

The popular and political commitment to homeownership is in many ways unique to the U.S.⁴ Constantly invoking, informing, and inciting these entrenched sentiments toward homeownership are politicians, public agencies, and private actors who are often pursuing very different objectives and may even have conflicting agendas. In a recent *New York Times* article, economist and famed housing market commentator, Robert

Shiller, co-creator of the Standard & Poor's/Case-Shiller Home Price Index, emphasized the pervasive presence of politics and government in the housing landscape since federal subsidy systems and housing agencies were created in the wake of the Great Depression. The Federal Housing Administration (FHA, created in 1934) and the government-sponsored enterprises (GSEs), the Federal National Mortgage Association (known as Fannie Mae, or simply "Fannie," created in 1938) and the Federal Home Loan Mortgage Corporation (known as Freddie Mac, "Freddie," created in 1970),⁵ have been the structural bulwarks of the federal government's homeownership agenda. Although historically Fannie and Freddie were privately held, with shares listed and traded on the New York Stock Exchange, in September of 2008 they were placed under government conservatorship. They remain in conservatorship – the federal government now holds 79.9% of their respective shares – and thus their future roles and structures remain unclear.

There have been many other government policies and regulations that reflect what Shiller terms the federal subsidization of housing as "a sacred cow in American society." For example: tax advantages such as income tax deductibility of home mortgage interest payments⁶ and partial exemption of owner-occupied houses from capital gains tax;⁷ and mortgage payment subsidization programs.⁸ Capital markets subsidies include: the sustained period of low Federal Reserve lending rates and low mortgage interest rates leading up to the housing bubble;⁹ federal mortgage insurance programs; the Federal Home Loan Bank system that provides favorable funding for savings institutions and other depositories that provide substantial residential mortgage lending; and the 'implicit' government guarantees of Fannie and Freddie after their 'privatization' is now a 'direct' guarantee with their con-

servatorship. The extent of government involvement in the housing industry has become even greater in the wake of the subprime crisis.

Besides the conservatorship of the GSEs, housing-related initiatives of the Obama administration include: tax breaks for residential builders; the first-time home buyer's tax credit; and the Neighborhood Stabilization Program under the 2008 Housing and Economic Recovery Act; the Federal Reserve and Treasury bailouts of the secondary mortgage markets under the Emergency Economic Stabilization Act (EESA) in 2008 and the Troubled Assets Recovery Program (TARP) in 2008, and the current spate of government-sponsored foreclosure prevention programs.¹⁰

While many Americans, especially those from racial minorities and low- and moderate-income backgrounds undoubtedly have benefited from the affordable housing policies and access to mortgage programs promoted by the GSEs and the federal government, the bitter aftermath of the subprime crisis unfortunately is also hitting the most financially vulnerable sectors the hardest. According to

Moody's economist Mark Zandi, more than 16 million homeowners owe more on their mortgages than their homes are worth. Currently, nearly one out of every ten American homeowners has missed at least one mortgage payment, and one in 25 homes are under the threat of foreclosure.

CREATING A MORE SUSTAINABLE VISION OF HOUSING

As the U.S. deals with the current foreclosure problems and considers the future of the housing and mortgage landscape, perhaps it is also appropriate to rethink the social and political preference for homeownership. Sustainable and affordable access to housing does not necessarily have to rely on the owner-occupant housing model. Should policy and infrastructure decisions shift toward a greater emphasis on affordable rental and multi-family housing options? As Shiller highlights, rental housing models have been proven viable in economically-advanced democracies such as Switzerland. A shift toward alternative housing models does not mean an abandonment of affordable housing goals or the neglect of minorities and lower-income families. In outlining their recommendations for the future of the home mortgage market, the Center for American Progress (CAPR), a Washington-based liberal public policy research and advocacy organization, advocates an alternative to a blanket policy goal of universal homeownership. While affirming an implicit support for the "affordable housing" agenda, the CAPR promotes a more refined approach of "adequate access to credit for all appropriate forms of housing" and promotes the notion of affordable rental housing as a viable, complementary alternative to affordable homeownership. The prominence and popular acceptance in New York City of rental housing is an encouraging practical model for other American cities to consider as housing markets are rebuilt.

U.S. Federal Government Housing Subsidies

- The Tax Reform Act of 1986 made interest payments on mortgages and home equity loans (not consumer loans) tax deductible, which made mortgage debt more attractive than other forms of consumer debt, and therefore stimulated demand for homeownership and mortgage refinancing.
- In 1997, Congress changed capital gains taxation to permit homeowners to exclude from taxation up to \$500,000 in capital gains on the sale of a primary residence.
- The 2003 Congress authorized \$200 million annually to help low- and moderate-income homebuyers.
- The Federal Funds Rate was maintained at 1% and the real, inflation-corrected rate was negative for 31 months from October 2002 to April 2005. This period corresponded with the most rapid increase in housing prices.
- Federally-sponsored foreclosure programs include: the \$300 billion FHA-run Hope for Homeowners (2008); the \$75 billion Obama Foreclosure Initiative (February 2009); and the recent Home Affordable Modification Program (HAMP).

CONCLUSIONS

The subprime crisis and its aftermath have returned homeownership and mortgage financing to the current social discourse as an issue and industry in need of reform. The human suffering and economic costs of mortgage defaults, foreclosures, and forced relocations is a real world reminder of the importance of these issues and the extent of the practical problems to be addressed. As we look back to understand past mistakes and those responsible, and look forward to consider how to rebuild the housing industry and revive mortgage markets, perhaps we should carefully and critically consider the political and social conception of homeownership as the cornerstone of the American Dream. ■

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Social Dynamics in Mixed-Income Neighborhoods

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Case studies of three mixed-income Boston neighborhoods reveal that: (1) the proximity of diverse populations is not necessarily accompanied by increased interaction among them; (2) the design and integration of affordable housing is critical to preventing the stigmatization of low-income residents; and (3) tensions are more pronounced when social and housing tenure differences coexist.

U.S. cities experienced a dramatic rise in concentrated neighborhood poverty between 1970 and 1990, when the number of people living in high-poverty neighborhoods almost doubled.¹ These high-poverty communities have adverse consequences for their residents, who have higher rates of criminal activity, gang membership, unemployment, school underachievement, and teenage childbearing.² The landscape of U.S. cities has changed dramatically since 1990, however, as a number of forces have converged to reduce concentrated neighborhood poverty. The strong economy of the 1990s lifted many families out of poverty, reducing neighborhood poverty rates. The affluent began moving back to urban centers, reversing decades of high-income migration to the suburbs. In addition, governments and developers enacted policies to deconcentrate poverty by moving residents of poor neighborhoods to non-poor neighborhoods, and by rebuilding poor neighborhoods as mixed-income neighborhoods.

These trends have created conditions for more economically-diverse neighborhood settings within central cities. Mixed-income neighborhoods are often touted as ideal residential contexts because

they offer diverse living environments where residents of varying economic positions have access to similar resources and opportunities. Yet, there is little data about the social dynamics within economically-diverse neighborhoods and how they compare to the previous models of segregated housing. The research presented here begins to shed light on the consequences of economic diversity within neighborhoods through the lens of three mixed-income neighborhoods in Boston.

RESEARCH DESIGN

Data was collected through in-depth interviews with residents living in three mixed-income neighborhoods in Boston. The neighborhoods chosen were selected because they differ systematically in their levels of racial diversity: South End (mixed race); South Boston (majority white); and Orchard Gardens (majority black). This allowed for an examination of whether the consequences of economic diversity are similar for racially-homogenous and racially-diverse neighborhoods. Table 1 shows details of the economic, racial, and housing composition of each neighborhood. Figure 1 shows the neighborhood boundaries and locations of the neighborhoods within the city of Boston.

Data collection involved in-depth qualitative interviews with thirty randomly selected residents in each neighborhood, which resulted in samples that reflect the racial and economic composition of the neighborhood. The interviews included a series of open-ended questions with probes to uncover:

- A)** How residents perceived their neighborhood, particularly its diversity
- B)** How residents interacted with their neighbors, especially those of different races and social classes

C) How residents utilized neighborhood space and resources, and the motivations for their actions

D) Primary sources of division and cohesion between residents

In the results that follow, I first provide a brief background of each of the three case study neighborhoods and describe the current pattern of economic diversity for each one. I then report on resident perceptions of the neighborhood, how residents interacted with their neighbors and utilized neighborhood resources, and the main divisions and tensions residents reported within the neighborhood.

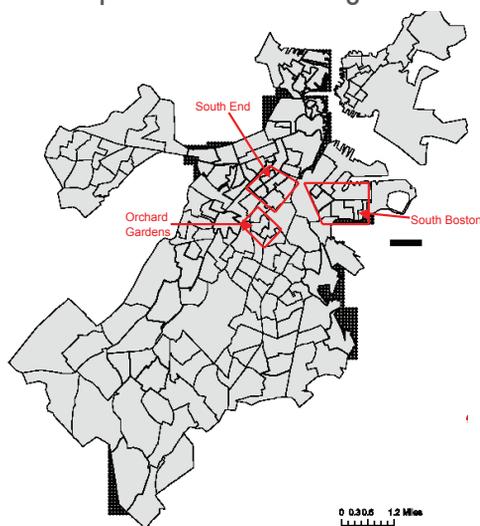


FIGURE 1 - Case Study Neighborhood Boundaries and Locations in Boston

SOUTH END:

"THE MOST DIVERSE MILE IN THE U.S."

HISTORY: Located close to downtown and the central business district, the South End initially was built to attract upper-class families, with large English-style townhomes and oval parks. Following the depression of 1873 and the development of the posh Back Bay neighborhood, the South End lost its appeal to the wealthy. Property values dropped, and speculators bought up the homes, turning many of them into rooming houses.

The South End became a destination for new immigrants and it was a poor, but culturally-vibrant, community. The area also gained a negative reputation as a skid row and the quality of the housing stock declined, driven by absentee slum landlords and impoverished tenants. By the time urban renewal came to Boston in the 1950s, the South End was a prime target. The renewal program aimed to redevelop the area so that it would attract higher-income residents, widening the city's tax base and promoting private investment. When planning began, social service organizations, low-income residents, and housing advocates mobilized to demand more affordable housing be constructed.³ Many of these efforts ultimately were successful, resulting in the construction of a range of affordable housing options in the neighborhood. Starting in the 1980s, the South End experienced widespread gentrification and skyrocketing real estate prices that have continued until the present.

PRESENT CONDITIONS: Urban renewal laid the foundation for the neighborhood's present economic diversity. Despite the increasing presence of affluent residents and rising property values, the area has maintained an economically diverse resident population due to the wide range of affordable housing – public housing projects, scattered-site affordable units, and non-profit-owned affordable developments – that was constructed during urban renewal. The affluent residents of the South End reside primarily in historic brownstones and high-end condominiums that are scattered throughout the neighborhood. Affluent, moderate-income, and poor residents also live together in mixed-income buildings that combine market-rate and subsidized units. Many such buildings were constructed during urban renewal, or as a result of Boston's inclusionary zoning requirements. In addition to living in these mixed-income buildings, some low-income residents live in architecturally distinctive apartment

complexes and public housing projects that solely contain subsidized housing.

FINDINGS: South End residents were quite aware of the economic diversity of their neighborhood, which they described in terms of its racial diversity and the close proximity of million-dollar homes and public housing projects. Many residents claimed the diversity of the neighborhood was part of what attracted them to the area. In addition to the diversity of lifestyles and races, the cultural richness, attractive architecture, and amenities also drew new residents.

However, the data I collected indicate that this proximity and appreciation for diversity did not lead to high levels of cross-class contact. Residents' daily routines, use of neighborhood space, and use of neighborhood resources were structured in ways that minimized cross-class contact. High- and low-income residents utilized different shops in the neighborhood, with affluent residents frequenting posh designer boutiques and high-end grocery stores, attending cultural events sponsored by artists, and eating at chic restaurants and bars. In carrying out these activities, many residents actively avoided walking on the streets along which public housing projects were located. Low-income residents utilized a different, and smaller, set of neighborhood resources and complained of few affordable shopping and dining options for them in the neighborhood. Other institutions, such as schools, were similarly segregated within the neighborhood, since moderate- and high-income residents sent their children to private schools or magnet schools, rather than to schools in the neighborhood.

Despite the minimal cross-class contact, friction between income groups occurred at places where they came into contact, including the borders of public housing projects and on the streets between homeowners, renters, and residents con-

gregating outside. Homeowners complained of the lack of property upkeep associated with renters, which sometimes led to tensions between neighbors, and higher-income professionals complained of the noise associated with unsupervised children, whom they often associated with residents of subsidized housing units and buildings. There was a great deal of tension directed toward the public housing projects, which residents derided for noise, gangs, drugs, and crime. The projects generated a sense of stigma that was not directed towards other locations where low-income residents lived, such as in the mixed-income buildings. Low-income minority residents also reported feeling uncomfortable when they traversed areas dominated by high-income residents, describing suspicious stares, increased surveillance, and unwelcoming interactions. This friction between income groups was strongest when residents' income differences were reflected in other forms of difference, such as housing type and race.

SOUTH BOSTON: "SOUTHIE IS MY HOME TOWN"

HISTORY: South Boston's location on a peninsula, branching away from downtown Boston into the Atlantic Ocean, reflects the physical and social separateness that has long-characterized this neighborhood. In the mid-19th century, industry took advantage of the large open spaces and cheap land in South Boston, staffing their plants with Irish immigrants, who lived in tenement homes constructed nearby. The more affluent families of South Boston lived in the eastern half of the neighborhood. As part of post-war housing efforts, the area became home to three large public housing developments in the first half of the 20th century. At the time they opened, each development had higher rents and labor force participation rates than the surrounding areas, but over time upwardly-mobile residents left the developments,

and the remaining population of the projects became more disadvantaged. Insularity and anger at city intervention came to a head during the 1960s and 1970s over racial integration in the public housing projects and schools. As the city conformed to court-ordered desegregation, widespread protests and violence erupted among South Boston residents that cemented South Boston's reputation as racist. Yet by 2000, all of these projects had become more racially and ethnically diverse. This diversity did not span the rest of South Boston, however, which remains distinctly white. A significant number of whites also live in the housing developments, resulting in some of the highest concentrations of white poverty in the nation.⁴ By the end of the 1990s, gentrification had come to South Boston. Sparked by the booming local economy, the construction of the convention center, and the development of the seaport, housing prices in areas of South Boston skyrocketed. By the end of the 1990s, many South Boston residents had moved to the city of Boston within the past decade, and these newcomers were primarily highly-educated young professionals.

PRESENT CONDITIONS: Unlike the South End, where residents of all incomes levels live in close proximity and sometimes within the same buildings, South Boston has more clearly delineated spaces defined by socioeconomic status, with poor residents and racial minorities primarily confined to public housing projects located on the outskirts of the neighborhood. Middle and affluent residents live more centrally within the neighborhood in a mix of New England triple-deckers, rowhomes, and single-family homes that contain a mix of homeowners and renters. The level of affluence generally rises as one goes up the hills located in the neighborhood, such as Dorchester Heights. There are also clusters of new high-end condo development along several of the neighborhood's central commercial streets.

FINDINGS: Residents of South Boston were largely unaware of the growing economic diversity of their neighborhood. Unlike the South End, where public housing complexes were more centrally located, race and class differences were highly correlated, and high- and low-income residents sometimes lived in the same buildings, the subsidized housing in South Boston was largely in peripheral locations, where middle- and upper-class residents did not travel. As a result, they were less aware of them and had to develop fewer routines to minimize their exposure to them. Public housing residents had a similarly limited perception of their neighborhood, often defining their “neighborhood” by the name of their housing project. This was most true of the racial minorities in public housing, who tended to be more recent arrivals than the white residents of the housing projects, who often were life-long South Boston residents.

Tenure, race, and housing differences were not correlated with income differences as closely in South Boston as they were in the South End. Instead, the main divisions in South Boston were among young, affluent professionals, long-term Irish “Southie” residents (both homeowners and long-term public housing residents), and non-white public housing residents. Each group developed a sense of inclusion with others in their group, but experienced exclusion from the other groups. There was little mean-

ingful contact across the boundaries of these three groups, and socioeconomic status did not always play a salient role in defining in-groups and out-groups. Because of their geographic and social isolation, non-white residents of public housing frequented a completely different set of shops and restaurants than other South Boston residents, took a different set of subway stops, and largely did not traverse “up the hill” to where more affluent residents lived. These non-white residents were newer arrivals who had been placed there as a result of the public housing assignment process and therefore had far fewer connections to the community. This created a strong sense of exclusion among non-white public housing residents. White public housing residents, in contrast, typically had long-standing ties to the neighborhood, which routinely took them to parts of the neighborhood other than the projects.

Tensions in South Boston, then, were largely based on length of tenure and race, rather than on economic standing, which was not typically a socially salient form of division between old-timers and newcomers or between races. For long-term residents of South Boston, regardless of income level, a close-knit community provided support and resources; however, this community was perceived as exclusionary and unfriendly by newer arrivals to the neighborhood. This sense of exclusion led some newcomer residents to be happy when other newcomers moved in around them, giving them more friends and a stronger sense of community. Racial differences also created tensions between public housing residents with similar economic positions, with long-term white public housing residents reporting hostility toward the non-whites in their developments. In each of these cases, income differences were either non-existent or not socially significant relative to the stronger divisions between residents on the basis of race and tenure length.



FIGURE 2 - South Boston: Public Housing in the Foreground, with Market-Rate Housing “Up the Hill”

**ORCHARD GARDENS:
"FROM ORCHARD PARK
TO ORCHARD GARDENS"**

HISTORY: Orchard Gardens, formerly Orchard Park, is one of Boston's three HOPE-VI housing developments and is located in the northern end of the Roxbury section of Boston, bordered by the South End and Dudley Square business district to the north. When Orchard Park was built in the 1940s, it was a racially-integrated, working-class community. Following the exodus of many middle-income and working-class families, macroeconomic changes in the availability of jobs for unskilled workers, and the rise of drugs and gangs, the neighborhood gradually deteriorated during the 1970s and 1980s. By the 1990s, the vacancy rate was almost 50 percent and abandoned apartments provided space for the drug and prostitution trades that had taken hold of the area. As one of the most-distressed public housing developments in the city, Orchard Park was a natural choice to receive HOPE VI redevelopment funds. HOPE VI allocated funds to redevelop the housing stock, create a mix of incomes in the new development, and earmarked substantial funding for social and economic services. Shortly after redevelopment, there was a shift in the economic profile of neighborhood residents. Employment increased, income and education levels rose, and the neighborhood became more economically diverse. Crime rates also declined dramatically, and the neighborhood is now maintained by a non-profit management company rather than the city housing authority.

PRESENT CONDITIONS: Orchard Gardens maintains its mixed-income structure by reserving specific fractions of its 350 units for residents in different income brackets. Once housing the most-disadvantaged public housing residents, it now contains subsidized units for low- and moderate-income families as well as market-rate

housing for more affluent families. The neighborhood remains primarily African American and Latino. All of the housing units are interspersed and physically indistinguishable from one another, regardless of the income level of the unit. The properties were designed to be attractive to market-rate residents, and the management company maintains a high level of cleanliness and property upkeep for all units. There are parks and small private front and back yards for many units, but despite the improvement in crime rates there is still a lingering gang and drug presence in the neighborhood.

FINDINGS: In Orchard Gardens, income differences correspond closely with tenure length, with moderate-income and market-rate residents having moved in after redevelopment was complete in the late 1990s. The lower-income residents were primarily long-term public housing residents who had lived in Orchard Park before it was redeveloped. These two groups, divided by income and tenure length, perceived their neighborhoods in very different ways. Long-term public housing residents described their neighborhood positively in terms of its improvement, describing current conditions relative to the prior conditions in which they lived before redevelopment. They had many good things to say about the neighborhood transformation. In contrast, newcomers described the lingering crime and drug problems that they observed as evidence that reinforced the negative stereotypes of the neighborhood they brought with them when they moved. The negative stigma of the old housing project lingered in their minds. Because income differences did not correlate with race, or with the type of housing in Orchard Gardens, the main differences between residents centered on length of residence in the neighborhood.

Residents' perceptions influenced their patterns of social interaction and use of



FIGURE 3 - Orchard Gardens: Outdoor Spaces in Foreground and Indistinguishable Mixed-Income Townhomes in the Background

neighborhood space and resources. The higher-income newcomers in Orchard Gardens had little interaction with their neighbors or neighborhood institutions, while the long-term residents who lived in the housing project prior to redevelopment did. Many long-term public housing residents of Orchard Gardens had strong social ties with other residents in the

neighborhood, which they used to keep safe and to keep informed of neighborhood events. In contrast, newcomers had weak ties with their neighbors. While this may be unsurprising given their relatively recent relocation to the neighborhood, most of the newcomers also actively resisted forming any new social ties within the neighborhood. Newcomers instead turned to their friends and family outside the neighborhood for social support and went outside of the neighborhood to shop. However, their lack of integration in the neighborhood left them distrustful of their neighbors and worried about their apartments, cars, and other property while they were gone. Because higher-income residents could not easily distinguish other newcomers like themselves on the basis of easily-observable markers like race or housing type, they limited their contact with everyone in the

	South End	South Boston	Orchard Gardens
Racial Composition			
White	50%	87%	4%
Black	25%	3%	60%
Hispanic	16%	2%	31%
Other	9%	8%	5%
Education			
Less than HS	19%	19%	35%
High School	16%	33%	23%
Some College	16%	21%	24%
BA or Higher	49%	28%	16%
Poverty Rate	24%	18%	27%
Household Income			
< \$10,000	18%	15%	20%
\$10-25,000	9%	18%	28%
\$25-50,000	21%	26%	31%
\$50-75,000	24%	18%	6%
\$75-100,000	10%	11%	4%
> \$100,000	18%	11%	10%
Primary Type of Subsidized Housing	Public Housing Mixed-Income Buildings	Public Housing	HOPE VI Mixed-Income Development

TABLE 1 - Descriptive Characteristics of Three Boston Mixed-Income Neighborhoods, 2000.
(Source: 2000 U.S. Census Tract-Level Data)

neighborhood, creating extreme patterns of micro-segregation and continuing isolation for former public housing residents.

New and long-term residents also differed in the strategies they used to keep safe from lingering violence in the neighborhood and to resolve conflicts. Long-term residents tended to be actively involved on behalf of their community and made efforts to maintain social control. Newer residents, however, withdrew from the neighborhood and generally did not intervene when they observed problems. They described this as a strategy of keeping safe in light of their lingering fears of violence in the community. Because they could not easily differentiate their neighbors on the basis of where they lived, their race, or other visible markers, these fears were directed towards the neighborhood in general, not at a particular subset of neighbors.

POLICY IMPLICATIONS

The results across these three case studies indicate that lower- and higher-income residents often live in the same physical space, but in different social worlds, with the lower-income residents feeling resentment and exclusion, and higher-income residents appreciating diversity while minimizing exposure to it. The results from these case studies suggest several overarching conclusions that are relevant for housing policy-makers and practitioners.

1. *Physical proximity does not necessarily result in meaningful contact or similar access to resources.* Living in the same neighborhood does not mean that high- and low-income neighbors will interact with one another in meaningful ways. Likewise, the presence of diverse neighborhood businesses and institutions does not result in their utilization by diverse groups

of residents. In fact, it often results in residents adopting patterns of avoidance and micro-segregation, where residents minimize their contact with members of different income groups.

2. *The design and integration of affordable housing affects the visibility of income differences and the stigmatization of low-income residents.* Large public housing projects are highly visible in neighborhood settings, due to their size and architectural distinctiveness. This renders low-income residents of public housing more visible and more stigmatized to market-rate neighbors, compared to similarly low-income residents who live in scattered-site affordable housing.

3. *Neighborhood reputations are sticky and linger after neighborhoods change.* Even if a neighborhood becomes more racially or economically diverse, it's past reputation persists and colors residents' perceptions and daily routines. Thus, perceptions – and the accompanying property values – may lag behind changing neighborhood economic and social contexts.

4. *Conflicts between residents are stronger and more durable when various forms of social difference overlap.* Income differences between neighbors are more visible and socially significant to residents, and result in more tension when those differences are highly correlated with differences in race, tenure type, and tenure duration. This makes it particularly challenging to maintain positive social dynamics in mixed-income neighborhoods that are also diverse in other ways. ■

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SUSTAINABILITY

The Impact of the Economic Crisis on the Decision to Retrofit

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Although economic exigencies have retarded the pace of sustainable development, retrofitting existing building stock offers property owners a viable alternative to capitalize on the energy efficiency and market caché of green buildings pending economic recovery. Wholesale building renovations, however, currently are less attractive than affordable repositioning and energy-efficiency improvements.

From the Empire State Building's \$20 million green retrofitting project to Hamilton Hall on the Harvard campus, the real estate industry is experiencing a burgeoning movement to retrofit existing properties. Retrofitting is the addition of new technology or equipment to an existing property in order to reduce operational costs, improve occupant health and productivity, and reduce adverse effects on the environment. Property owners are pursuing green retrofitting projects to reduce utility costs and differentiate themselves to fulfill increasing tenant demands for sustainable properties. In addition to operational efficiency and environmental concerns, government officials are supporting retrofitting programs to create jobs and restore economic growth. The current momentum in green building and retrofitting, however, took a very long time to develop, evolving over nearly 40 years to what it is today.

THE CASE FOR RETROFITTING

Despite the temporary difficulties caused by the current financial crisis, we remain optimistic about the business and socioeconomic potential of the retrofitting market. President Obama's goal for Copenhagen 2009 is to achieve 80%

greenhouse gas reduction by 2050.¹ Seventy-five percent of the world's greenhouse gas emissions come from cities,² which only occupy two to three percent of the world's land mass. In the future, this trend will continue as megacities proliferate and as India and China expand their cities to accommodate migration of more than 30 million persons per year.

To date, however, green building practices have under-emphasized the importance of sustainable retrofits of existing building stock across the globe.³ The problem of building inefficiency is more acute in developed countries, where more than 98% of the building stock consists of existing buildings and new construction accounts only for 1-1.5% of total building stock at any time.⁴ New York's Office of Sustainability estimates that of the 950,000 buildings in the City today, 85% will still be standing in 2030.⁵ Sustainable new construction, no matter how environmentally sensitive and energy efficient, cannot by itself significantly change the environmental impact of the built environment. In the U.K., for example, more than 77% of the commercial building stock was constructed before the establishment of building regulations that enforced energy conservation.⁶ Most of the buildings in existence today will be with us in the long run. Thus, green property retrofits are critical to global energy conservation and green design, and technologies will achieve their full potential only when applied to the existing building stock.

It is worth noting the conclusion of a McKinsey study on energy efficiency, which makes a strong case for retrofitting existing stock: "Energy efficiency offers a vast low-cost resource for the U.S. economy, but only if the nation can craft a comprehensive and innovative approach to unlock it. Significant and persistent barriers will need to be addressed at multiple levels to stimulate demand for energy efficiency and man-

age its delivery across more than 100 million buildings and literally billions of devices. If executed at scale, a holistic approach would yield gross energy savings worth more than \$1.2 trillion, well above the \$520 billion needed through 2020 for upfront investment in efficiency measures (not including program costs). Such a program is expected to reduce end-use energy consumption in 2020 by 9.1 quadrillion BTUs, roughly 23% of projected demand, potentially abating 1.1 gigatons of green house gases annually." It will also generate 600,000 to 900,000 jobs in the process.⁷

EFFECTS OF THE RECESSION

Since the recent decline of the U.S. economy, beginning in mid-2007 with the credit crisis and the plummeting of asset values, priorities for many stakeholders in the real estate industry have been re-evaluated. The resulting state of the economy, marked by complete illiquidity in the credit markets and limited access to capital, has affected not only the housing sector, where the credit crunch began, but also the entire real estate market.⁸

Furthermore, the soaring energy prices of the last few years have exerted pressure on the real estate market to embrace sustainable building and retrofitting by yielding increasingly attractive financial returns on green investments. But the economic crisis did not affect energy prices as drastically as it did most other sectors, leading oil prices to plummet from a high of \$140 per barrel in July 2008 to \$35 per barrel by the end of December 2008.⁹

The one-two punch of the virtual shutdown of credit markets coupled with investor risk aversion and the precipitous decline of energy prices may not have given the green building and retrofitting market much of a fighting chance in the recession; however, some experts assert

that statements heralding the decline of the green building market are premature and exaggerated. Instead, they aver that current economic conditions will only slow, not stop nor reverse, the shift to green buildings.¹⁰

Recent market data exists to support the theory that building owners will remain interested in green building. On a basic level, buildings that are “green” are still worth more than buildings that are not. An April 2008 study by the CoStar Group found that LEED-certified buildings enjoyed rent premiums of \$11.24 per square foot over their conventional competitors, and had a 3.8% higher occupancy rate. Some LEED-certified buildings in the study also sold for an average of \$171 more per square foot than their conventional competitors.¹¹ Though property values in general are down significantly, there is indication of a steady demand for green buildings, buoyed by the outperformance of those buildings in energy efficiency and the relative scarcity of green buildings in the mix. This suggests that property values for green properties in particular have not fallen as much as the market average suggests.¹² There will also be a higher discounting

by professional appraisers of the existing stock of brown buildings based on their condition as more rated green buildings are introduced into the market.

Another argument in support of the relative strength of the green building and retrofitting market through the recession is that because green building was gaining momentum as the economy faltered, there is a significant backlog of green projects nearing completion and awaiting certification. In the LEED Existing Buildings (LEED-EB) market, the ratio of projects in the pipeline (registered) to projects that are complete (certified) is nearly 20:1.¹³ One reason for this is that the learning/experience curve initially was steep. New building techniques take time to master and the green certification process can be cumbersome for the uninitiated. However, research shows that as practitioners become proficient, development grows exponentially. This is certainly true of the LEED New Construction market (LEED-NC), but it appears to be true of the nascent LEED-EB market as well.¹⁴ Exhibit 1 shows exponential growth of both LEED markets.

LEED BUILDING AREA BY YEAR AND PROGRAM

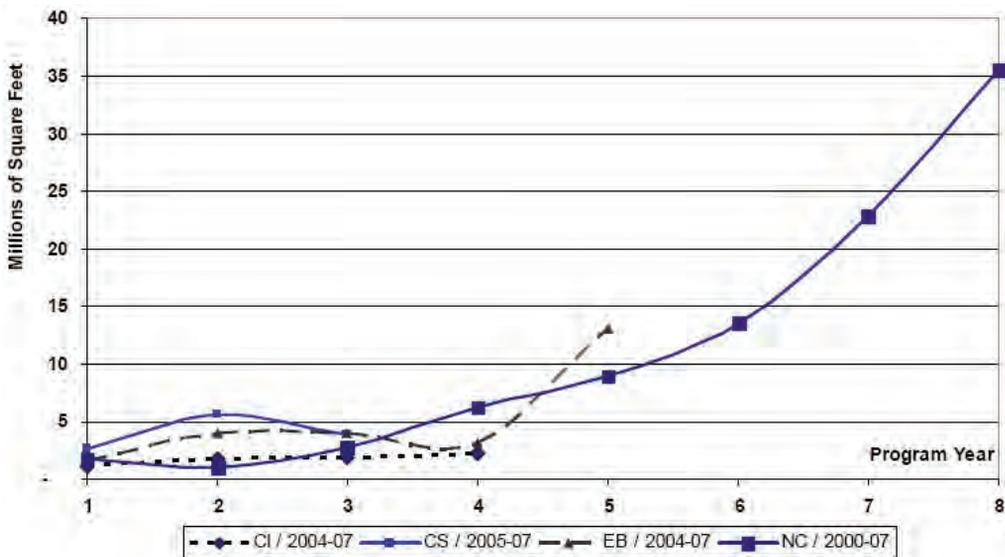


EXHIBIT 1 - Sources: USGBC and RREEF Research

A SHIFT IN FOCUS FOR THE INDUSTRY

Interest in pursuing green projects has not abated, only temporarily softened due to capital constraints. Green retrofitting offers an enticing option to would-be green property investors and managers. Companies that cannot afford to construct a new green building due to the recession, or that cannot afford the disruption of moving to a green building, may find that green retrofits are a reasonable way to reap the many benefits of green workplaces.¹⁵ But even for companies and organizations that were already choosing retrofit over new construction, the focus has shifted. The goal now seems to be affordable repositioning and energy-efficiency improvements instead of more-costly complete building renovations.¹⁶ Minor modifications and capturing low-hanging fruit are the first and most reasonable steps for most. Larger jobs may be deferred until capital becomes available.

NEXT STEPS

STANDARDIZATION AND MEASUREMENT: The industry needs best practices and standards not to only rate buildings (such as LEED and BREEAM)¹⁷ but also to utilize them to undertake retrofitting projects at a micro level for office, industrial, and residential space. The current benchmarking work done by some states is insufficient, as it does not apply to all building types and cannot be generalized due to variable local weather patterns. Measurement is also indispensable since building performance cannot be evaluated, benchmarked, and improved without it. Measurement and verification by home/office-based and grid-level devices is also critical for securing private investment in energy efficiency.

REGULATION AND INCENTIVES: Why should an existing tenant or building owner invest upfront for benefits that may be realized in the distant future, if at all? The question is

justified on the part of the investors and has been the biggest obstacle to retrofitting. We believe that there is a need for pilot programs and innovation in green financing to overcome this hurdle. We have analyzed the situation in terms of alignment of interests for the various stakeholders involved:

- **GOVERNMENT:** If the US government commits to GHG reductions, then the pressure on owners of existing building stock to work towards energy efficiency will be intense. It's a winning proposition for the U.S. government, as regulation will not only diminish greenhouse gas emissions, but will also create thousands of jobs in the process. A few state governments have started giving property owners subsidies in the form of tax credits for rated green buildings. We believe this trend will soon spread to all states and will also support green ratings, and thus indirectly uphold the retrofit movement.

New York City's six-point Greener, Greater Buildings Plan, passed on December 9, 2009, provides a perfect example of regulatory trends. The plan, introduced on Earth Day and enacted as part of PlanNYC (a comprehensive sustainability plan for the City's future), includes four bills that will dramatically reduce the City's energy usage, saving consumers \$700 million annually in energy costs, while creating 17,880 jobs and reducing New York City's carbon footprint.¹⁸

- **TENANTS:** The upfront capital costs incurred for a retrofit project cannot be transferred to tenants immediately. Thus, green leases and performance-based contracts with utility companies will be standard in the future. Moreover, tenants need to be educated about the benefits of making their occupied space energy efficient in order to encourage adoption. An innovative way to do this was demonstrated by

Jonathan Rose Companies, a New York-based green real estate development and investment firm. For one of their properties, the firm instituted an online web portal where tenants could view how energy efficient they were compared to others. This pseudo-competition lowered energy use by 10%.¹⁹

– **ENERGY SERVICE COMPANIES AND PROPERTY MANAGERS:** Owners benefit as operating costs are reduced and when they have a more satisfied tenant base. It is again imperative, and justifiable, that the owner not generally bear the entire capital costs upfront; this can be achieved through innovative leasing terms and involving the utility provider. The utility provider, will only benefit if the system is controlled and monitored upon retrofitting. A smart grid-based system for monitoring and controlling consumption upon retrofitting therefore is needed.

LOOKING TOWARD THE FUTURE

Unlike in the 1980s, when the environmental movement slowed, there are numerous indications that the current movement will only gain momentum. Record-level energy prices in 2008 and the recent economic recession have increased societal pressures to minimize U.S. dependence on fossil fuels and foreign energy sources. Property owners are consistently looking to retrofit their properties to decrease utility costs and market their properties as efficient and sustainable buildings. They are also experiencing pressure from tenants, who are increasing their demands to occupy sustainable properties in order to reduce their utility expenses and increase employee productivity.

The future pace of retrofitting, however, will be dependent on the implementation of regulations and realistic distribution of costs and benefits among the various stakeholders. Private corpo-

rations and government entities have been setting emissions reductions goals. In addition, the introduction of tangible reduction goals and other legislative measures can be an effective strategy to drive innovation and compliance. These measures will force building owners and municipalities to think harder and more creatively about how to make strategic investments in energy efficiency. How they will be implemented and enforced remains to be seen, however.

But federal, state, and local governments have also begun to offer assistance to growing concerns and public interest. The Recovery Act's Green Retrofit Program offers \$250 million in grants and loans to improve housing unit energy efficiency, incorporate Energy Star appliances, enact recycling programs, and take other steps to make properties more energy efficient and create green collar jobs.²⁰ As governments become more active in this arena, it is likely that retrofit loan funds will also be a key component to success. Such funds have sprung up across the country to help building owners access capital to make these environmentally and economically-beneficial investments. Banks, community development financial institutions, and governments are trying to offer these types of loan funds. Unfortunately, loan funds can be difficult to implement since capital-constrained building owners run the risk of default, and zero-interest loans are nearly impossible to come by without government intervention. Additionally, many of the existing loan funds do not provide the technical assistance needed to promote adoption.

We are at the tipping point in the adoption of technology to manage and monitor building operations. With the advent of smarter buildings and the need for continual monitoring, alongside advances in information technology, it is evident that technology will play a crucial role in the large-scale adoption and imple-

mentation of green retrofitting. With the development of innovations in building technology such as smart grids, efficient lighting, waste conservation, solar power, insulation, and building materials as well as the development of new approaches such as biomimicry, the stage is set for large-scale retrofitting of existing buildings.²¹

Recent economic events have slowed the momentum of this green movement, but the dynamics signal that the retrofitting industry will continue to expand and grow. According to a new study by Pike Research, the total potential market for major green renovations in the commercial building sector is approximately \$400 billion.²² Market conditions, governmental regulations, and societal pressures are forcing owners and investors to embrace energy efficient properties. Therefore, we remain optimistic that the economic effects are short-term and that the long-term business, environmental, and social incentives for green retrofits are significant. We believe that tenant demand, regulation, and incentives will drive this industry, and that awareness and technological improvements will promote its eventual large-scale adoption. ■

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SUSTAINABILITY

Sustainability Initiatives at Harvard

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In the ten years since its inception, the Harvard Green Campus Initiative has funded building upgrades through the revolving Green Campus Loan Fund, established sustainability advisory services, issued Green Building Guidelines, and committed to reduce Greenhouse Gas (GHG) emissions to 30% below 2006 levels by 2016.

GREEN CAMPUS SUSTAINABILITY INITIATIVE

In 1999, a concerned group of Harvard University faculty, staff, and students formed a committee to discuss sustainability on the Harvard campus. Out of that group, the Harvard Green Campus Initiative (HGCI) was formed in 2000 to address these issues from a coordinated, University-wide perspective. HGCI developed a strategic plan to make the campus greener and received five years of funding from the Office of the President as a sign of the University's commitment.¹ HGCI was not intended to lead Harvard's effort by imposing command and control-styled regulations and policies. Instead, each school and department was responsible for addressing sustainability issues themselves. HGCI's role was to raise awareness across the campus, provide thought leadership, facilitate best practice sharing and create the necessary support and infrastructure so that individual departments and schools were best positioned to augment their sustainability. Very quickly, the HGCI's popularity expanded as faculty members and students gravitated to the cause. "In its short life, literally hundreds of faculty, students, and staff

have contributed their time and energy,” said the HGCI in its newsletter. “By most standards, HGCI is now an inter-faculty movement powered by the individual environmental, economic, and social convictions of many members of the Harvard community.”²

GREEN CAMPUS LOAN FUND LAUNCHES

HGCI’s initiatives were extensive, but one of the most powerful and tangible was the creation of the Green Campus Loan Fund (GCLF), intended to support “environmentally and economically beneficial projects.”³ In its initial stage, GCLF was a \$3 million revolving loan fund, which provided interest-free capital to Harvard departments. To support the fund, HGCI also developed technical assistance expertise to help facility and operations managers identify and manage building upgrade projects.⁴ To be eligible for HGCI support, projects had to reduce the University’s environmental impact and have a payback period of fewer than five years. The Fund’s creation served four key purposes:

- **BRIDGE FINANCING:** Allowed departments that were capital constrained to borrow money to make upfront investments. Annual cost savings were then used to pay back the loan.
- **ZERO-COST CAPITAL:** Encouraged departments to consider environmentally beneficial investments by providing “free” capital.
- **PROJECT IDENTIFICATION AND RISK MITIGATION:** Helped departments that were unfamiliar with green building upgrades by helping to identify and manage projects, thereby reducing risks. In the early years of the fund, HGCI provided 60% of the funded projects with technical assistance services.⁵
- **SIGNAL OF UNIVERSITY’S COMMITMENT:** Reinforced the University’s commitment to

HGCI and sustainability. The Offices of the President and Provost of Harvard University endowed the Fund.

Since its launch in 2002, the GCLF has been a tremendous success. The size of the Fund has quadrupled, so it is now a \$12 million fund. It has loaned \$11.5 million for 153 projects. Together these projects have yielded about \$4 million in cost savings thus far, and the median project return on investment is 27%.⁶ As a recent example, GCLF helped to fund the retrofit of 10 university garages with efficient lighting fixtures and sensors, resulting in an expected reduction in energy consumption of over 50% and expected annual cost savings of \$400,000.⁷

HARVARD BUSINESS SCHOOL’S MOVEMENT TOWARDS SUSTAINABILITY

The biggest beneficiary of the GCLF in its early years was the Harvard Business School. In the Fund’s first 30 months of operation, HBS accessed over \$1.1 million in capital for ten projects, which included the installation of a 75kW cogeneration unit in Shad Hall. During that 30-month period, HBS reduced its utility costs by \$215,000 annually (5.5% of total utility costs) and reduced CO² emissions by 2.7 million pounds.⁸ According to HBS Chief of Operations, Andy O’Brien,⁹ HBS really began to focus on energy retrofits in the early-to-mid-2000s, primarily in response to rising commodity prices and soaring energy costs. For HBS, energy retrofits were a cost reduction strategy and a strategic diversification of its energy inputs. Mr. O’Brien continued that administrators were responsive to the Department of Operation’s retrofitting proposals primarily because they were able to clearly show expected cost savings for its investments. The availability of free capital through the GCLF and through government- and utility-administered grants and rebate programs helped make the economics workable in some cases, and even more attractive

in others.¹⁰ Since the early 2000's, Mr. O'Brien estimates that HBS has spent \$3 million in retrofit improvements, which has yielded \$900,000 in annual operational savings.

While HBS continued to identify and realize cost savings from energy retrofits, Mr. O'Brien notes that by 2005 the Operations Department was also seeing an increased interest in environmental issues by students, administrators, Harvard University, and the press. Seeing a need for a more permanent focus on sustainability within his office, Mr. O'Brien created a new position within Operations to lead energy and sustainability efforts at HBS. The Operations Department also launched a sustainability initiative that focused on energy conservation, waste management, best practices, and peer-to-peer education. As the issue of sustainability became more prominent to the campus, HBS embarked on its first LEED-certified building project. Hamilton Hall, a 48,000-square foot facility comprising 72 dorm rooms, was originally built in 1926 and required a gut renovation. The renovation work received LEED Gold Certification and Hamilton, became the second residence hall at Harvard to achieve LEED certification. Today, HBS has five LEED-certified buildings, with two more approvals pending. Harvard University has 20 LEED-certified buildings, with another 20+ green buildings in some phase of design or construction.¹¹

FORMALLY EMBRACING LEED "GREEN BUILDING SERVICES"

LEED certification has become a key, and widely referenced, component of Harvard's sustainability strategy. From the outset, the HGCI and the University encouraged departments to include sustainability considerations in their capital project decision-making, but did not provide any specific requirements. To that end, HGCI introduced the Harvard cam-

pus to LEED certification, which could serve as an independent verification and brand for sustainable buildings. HGCI developed LEED expertise and created an advisory service, now called Green Building Services, to help departments better understand LEED guidelines with respect to individual projects.

In 2007, Harvard established its Green Building Guidelines to codify its commitment to sustainable real estate and to identify specific goals that all capital projects must meet. Most importantly, the guidelines require all new construction and renovation exceeding \$5 million to attain LEED Silver Certification and achieve certain LEED credits. HBS and several other departments have even committed to targeting LEED Gold certification. The guidelines are slightly more relaxed for capital projects of less than \$5 million; those projects are not required to achieve LEED certification, but are still encouraged to meet many of the LEED guidelines.¹²

Several Harvard buildings had been LEED certified before the Green Building Guidelines were adopted; however, some leaders question the environmental value of LEED certification. Doug Scatterday of HBS Operations indicated that LEED certification is more of a brand and symbol of leadership in sustainability than anything else.¹³ Jim Gray of Harvard Real Estate Services (HRES) agreed that by virtue of being on a campus in an urban setting and the quality and planning that go into Harvard's construction projects, LEED Silver is not a difficult goal to achieve.¹⁴ For example, Aldrich Hall on the HBS campus is a certified LEED Silver facility, but when the renovation began in 2004, LEED certification was not considered a goal. It was not until 2006 that the team first considered LEED certification. Due to previous measures to promote energy efficiency and environmentally-friendly product selection, they were still able to achieve LEED

Silver even at such a late point in the project.¹⁵

More importantly, the adoption of the Green Building Guidelines (GBG) marked a decision point for Harvard University. The GBG clearly showed that the University valued the social good of obtaining LEED certification over the incremental costs incurred to achieve the certification. This is a decision that is currently a topic of hot debate among developers and building owners.

FORMAL COMMITMENT TO GREENHOUSE GAS REDUCTION

Another key component of the University's sustainability strategy is the very public commitment to reduce GHG emissions to 30% below 2006 levels by 2016. For the first time, Harvard University and its departments and schools have a quantitative energy reduction goal for which they are accountable. This ambitious goal has served as a rallying cry to motivate the University and mobilize the full strength of its resources. Concurrent with the announcement, President Drew Faust created the Office for Sustainability to replace and build on the success of the HGCI. This new Office will expand on HGCI's initiatives and provide vision and oversight for the University's GHG reduction goal. One of the key strategies for reducing the University's GHG emissions is the continued retrofitting of buildings.

SO MANY POSSIBILITIES, WHICH PROJECTS TO FUND?

There are countless projects that could be undertaken, but given a world of limited resources, how does Harvard decide which to pursue? Generally, projects are considered across three key criteria:¹⁶

- **FINANCIAL:** Some of the key financial implications considered include IRRs and payback periods. The decision-maker

also needs to understand the source and cost of funds (e.g. GCLF, grants, operating budget, capital budget) to help understand budgeting requirements and the opportunity cost of capital.

- **ENVIRONMENTAL:** Typical metrics considered for environmental benefit include the reduction in GHG emissions or energy waste.
- **SOCIAL:** Social benefits are harder to quantify, but could include a contribution to the vitality and pride of the community, or a public declaration of leadership or innovation that the project might represent. It also represents the quality of the tenant's experience in the building.

While the framework is easy to understand, it is more difficult to identify a standard weighting system for each component. How much is each unit of reduction in greenhouse gas worth? How much value does the tenant experience carry? The decision is simple when the project is attractive across all three lenses; but what happens when a project is financially attractive but yields only minor environmental benefit and no social benefit? Is it a good allocation of capital? What if the project has a negative financial return, but significant environmental savings and social benefit?

In the early days of the HGCI, the University provided little formal guidance on how to answer those questions. Each individual department or school made its decisions based on its unique set of criteria. Mr. O'Brien was clear in saying that early on the biggest priority for HBS was always financial cost savings. Mr. Gray, on the other hand, indicated that in the early days of the HGCI, his impression was that, "the Cambridge side of the river was much more environmentally focused. We were more concerned with saving the world than money."¹⁷ Luckily

in the early days of HGCI, this tension was not palpable since there were so many projects that met multiple criteria. In the first 30 months of the Green Campus Loan Fund, project ROIs averaged 34%, and annual GHG reduction was 2% of 2003 levels.¹⁸ Since then, ROIs of GCLF-funded projects have declined from the mid-30% range in 2005 to mid-to-high 20% range today.¹⁹ ROIs are expected to continue to compress and investment decisions have become more challenging as many of the financially attractive “quick-win” projects have been undertaken.

During the mid-to-late 2000s, the University began to assert greater control over investment decision criteria. New requirements were introduced, such as LEED certification and GHG reductions, which helped to qualify and prioritize the social and environmental aspects of the decision-making process. As a result, projects like the recent installation of wind turbines on the Soldiers Field parking garage have been completed. The environmental savings are expected to be relatively small, only about 5-10% of the garage’s energy needs, but the social benefit appears to be paramount. The turbine, developed in partnership with the State, serves as a visible symbol of the University’s leadership and as a means to raise campus awareness and pride in sustainability initiatives.

In addition to making capital investments to create more-efficient real estate assets, Harvard is also actively pursuing zero-to-low-cost behavior modification programs. The low cost of these initiatives helps bypass the tension among environmental, social, and financial project benefits by producing an attractive ROI.²⁰ A recent example was changing building schedules on the HBS campus so that buildings are opened thirty minutes before their first use and closed thirty minutes after their last use. Previously, there had been a two-hour interval before and

after building use. Behavior modification measures have proven to be a low-cost, effective environmental strategy that can be readily implemented by other building owners.

THE IMPACT OF THE CRISIS ON HARVARD UNIVERSITY

The financial crisis has impacted the various organizations within Harvard in myriad ways; however, the biggest considerations seem consistent across organizations at the University, and with those in the private sector: both the costs of financing projects and the cost of energy. During the recent downturn there has been a rise in energy prices, and the long-term bet is that these prices will continue to rise. One thing on which all sustainability experts at Harvard agree is that the crisis has certainly affected access to capital for sustainability projects.

Interestingly, how they approach this constraint on capital varies from organization to organization. Mr. O’Brien and Mr. Scatterday believe that the reputation they have established and their past successes in cost savings have enabled them to continue to obtain approval for most of their plans. Furthermore, as far as energy prices are concerned, as Mr. O’Brien said, “If you are going to hedge energy prices, they are only going up in the long term. This increases our argument that we need these energy efficiency projects because of the crisis, not despite it.”²¹ Mr. Gray feels a little differently, however, when it comes to the impact of the financial crisis. While he agrees that energy prices will rise in the long-term, he explains that the recent fall in energy prices has forced downward pressure on upcoming projects because it makes the financial analysis appear less favorable. Also, the pipeline of HRES projects has slowed during the crisis because the University’s debt capacity has been significantly reduced. For the first time in recent history, the Univer-

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sity is concerned with bond ratings, and therefore, even if an organization within Harvard can afford to finance a project, they might not qualify for it. There is still a lot of interest in low-hanging fruit that can earn returns in one to two years, but “there don’t seem to be many of those left.”²²

Despite the crisis, Mr. Gray affirms that the University remains committed to achieving LEED Gold certification whenever possible, because the benefit of the positive public response and marketing still outweighs the incremental cost of certification, which is already relatively low for Harvard. Mr. O’Brien admits that the financial crisis has led HBS to become more selective about its future retrofit plans. In the summer of 2009, HBS Operations hired Aramark Corporation to conduct an energy audit of HBS facilities in order to identify which buildings were the worst offenders. “With campus utility bills as the only metric, it is hard to tell which buildings waste the most energy,” Mr. O’Brien says.²³ The results of the audit proposed over 100 possible projects costing approximately \$12 million. These projects are currently being

analyzed across the spectrum of financial, environmental, and social metrics to determine the priority of the projects to be undertaken. However, in the long-term, there may be a conflict between those projects in greatest need of attention because they are energy wasters and those that can achieve the quickest returns.

This dilemma notwithstanding, Mr. O’Brien remains optimistic that HBS will choose projects that benefit the school more directly, if not financially, then at least environmentally or socially. “If we renovate Kresge, it may have a 20-year payoff. If we send the money to Brazil in carbon offsets, for example, instead of renovating Kresge, we might have a much quicker payoff. But I think I will be more inclined to put that money into Kresge anyway.”²⁴ The Harvard GHG reduction goal also raises the profile of environmental benefits in the investment decision equation. Right now, the majority of retrofit projects at HBS are still attractive on a financial basis, but some important questions remain. With HBS pushing to meet its goal for GHG reductions, will financial considerations



EXHIBIT 1 - Interactive Map of Sustainable Retrofits at Harvard Business School Campus

continue to be the key driver? Would HBS ever consider losing money on a project that would yield significant GHG reductions to help achieve its GHG target? If so, how much? These are issues that HBS and Harvard administrators are grappling with today. The use of carbon offsets is also currently under consideration. Harvard's stance on carbon offsets will clearly impact the priority of environmental benefits in the retrofitting decision model.

CONCLUSION

Harvard's sustainability initiative is clearly a step in the right direction. Harvard has developed a strong infrastructure and support system to help its efforts. The launch of HGCI and then the Office for Sustainability raised the level of awareness on campus. The introduction of the Green Campus Loan Fund, best practices exchanges, and countless other initiatives provided the University with the capital, experience, and ideas to address sustainability. HGCI's technical support, in helping to develop projects and manage them, has made these projects less risky and more realizable.

The short, but rapid, evolution of sustainability in real estate assets at Harvard represents many of the successes, trends, and underlying tensions that building owners across the world are facing. Harvard, in many respects, is an idealized example of the "ecosystem" of commercial and residential real estate, with building owners, tenants, investors, and developers all struggling to achieve the best and most efficient use of their capital and real estate assets. Stakeholders have been relatively well aligned and the University has invested considerable resources and expertise; however, the tension between the underlying rationales for sustainable real estate has been real. Some groups are driven by the environmental benefits, and others are driven by the financial

ones. The trade-offs inherent in retrofitting decisions at Harvard are the same issues that plague developers, owners, and tenants elsewhere; but at Harvard, the key stakeholders are all members of the larger University community, with similar goals. When those stakeholders are different, the decision-making process is more complex and can lead to inaction. ■

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tive enough proxy to indicate a directional decrease in ROIs funded by the GCLF.

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Life Cycle Cost Analysis Methodologies and Applications of Value Chain-Based Sustainable Design Decision Metrics

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To enhance the decision-making and project management utility of Life Cycle Cost Analysis both in the institutional and private sectors, a multi-faceted sensitivity analysis protocol is proposed. Potential applications include: risk management; identification of root causes of cost differentials between conventional and sustainable alternatives; and the development of contracting standards to promote greater cost competitiveness.

EXECUTIVE SUMMARY

Life Cycle Cost Analysis (LCCA) is vital to sustainable design and construction decision-making because of the prevailing perception of, and concern over, the greater expense associated with green building. Private sector developers and investors have lagged behind the public and institutional sectors in the adoption of sustainable building features because the additional investment typically is deemed economically unjustifiable. Colleges and universities, by contrast, have become environmental stewards out of pragmatism as well as principle. As institutions charged with educating future leaders, they are obliged to demonstrate their own dedication to contending with the most critical of contemporary challenges. Moreover, since higher education institutions have extensive real estate assets, their ideological commitment to sustainability is paralleled by the imperative to reduce facility construction and operating costs.

Within the institutional context, LCCA is an indispensable tool for minimizing expenditures pursuant to budgetary constraints, and for determining funding allocations to multiple sustainability

implementation strategies. It is equally critical in assessing the cost-benefit ratios of the various tiers of the LEED rating system and evaluating value engineering alternatives. Moreover, LCCA also is a mandatory component of many grant and subsidized loan programs that underwrite the costs of green building technologies. In sum, LCCA enables institutions to derive the greatest value from the scarce resources allocated to sustainable building practices.

University leaders in green building currently use an array of LCCA methodologies that include simple payback, discounted payback, net present value, and adjusted internal rate of return measures. These metrics, however, are not commonly subjected to sensitivity analysis and therefore represent best-case scenarios that do not adequately account for discrete cost drivers and potential risks. To enhance the decision-making and project management utility of LCCA, a multi-faceted sensitivity analysis protocol is proposed, consisting of: value chain-based investment cost disaggregation; computation of probable annual savings; partitioned return ratios; and incremental investment analysis. In addition to providing a more realistic assessment of the true costs of sustainable design alternatives, this data also can be applied to risk management as well as the development of contracting and procurement standards intended to induce vendors, contractors, and service

providers to realign their cost structures in exchange for greater market share commitments.

The adoption of more fine-grained LCCA computations by the insitutional and public sectors will yield data that potentially can be harnessed to isolate root causes of cost differentials between standard and sustainable alternatives, incentivize vendors and contractors to become more cost competitive, and document the resulting decline in price premiums. Assuming accumulated data were pooled and made widely available, the private sector could more accurately identify green building strategies that meet its shorter-term payback calculations and higher yield thresholds. As economies of scale emerge in sustainable building construction, the LCCA methodology proposed herein for the insitutional sector will become increasingly relevant to private developers, owners, and operators.

THE "GREEN PREMIUM"

As recently as 2001, a survey of California developers "estimated that green buildings cost 10% to 15% more than conventional buildings."¹ Statistical studies, however, have demonstrated the widespread adoption of sustainable building practices has, at a minimum, reduced the cost premium to levels significantly below the above-cited expense levels and, in fact, may have eliminated

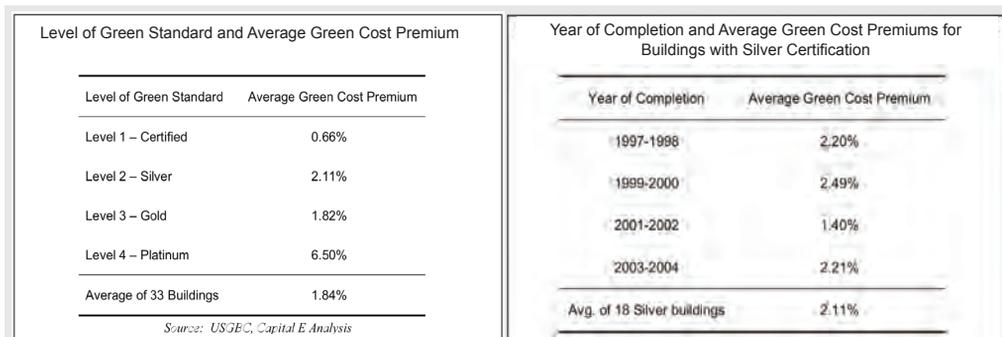


FIGURE 1 - Green Building Premiums by Category and Year of Certification
 (Source: Kats, "The Costs and Financial Benefits of Green Building")

it altogether. A 2003 study commissioned by the California Sustainable Building Task Force revealed an average cost premium of 1.85%, although there was considerable variability depending on the level of LEED certification sought.² The findings also indicated that the cost premium tended to decline over time as participants gained greater facility with green building; the 2003-2004 trend reversal was attributed to ongoing project cost estimates, which tend to overstate the eventual cost premium.³

More recent studies, by contrast, have concluded when building cost data is segmented by program, the disparity between buildings explicitly designed to meet LEED rating criteria and those that were not was negligible.⁴ Program-segmented analysis indicated that program was a more significant cost determinant than sustainability, and that superior LEED rating categories were not necessarily correlated with increased expense.

Methodological discrepancies aside, both studies demonstrated that commissioning and monitoring were the most significant cost components of sustainable projects.⁵ Davis Langdon further documented that the majority of LEED credit items entailed minimal or no additional costs. Only water storage, roofing, lighting, and glazing generated additional costs, while most other expenses associated with credit achievement resulted from soft costs or unavailability of local

services.⁶ Of those items, water storage cost-benefit ratios generally were unfavorable due to the relatively low cost of water services. By contrast, energy savings were the most significant tangible return component. The LCCA methodology enhancement proposed herein isolates these cost drivers so that soft and hard cost effects on return metrics can be separately quantified and managed.

HIGHER EDUCATION INSTITUTIONS' LEADERSHIP IN SUSTAINABLE DESIGN

Over the past decade, higher education institutions, enrollment growth trends notwithstanding, increasingly have been competing for prospective students on the basis of campus amenities. In particular, the quality of residential housing options now figures prominently in a prospective student's selection criteria.⁷ The need to reduce operating expenses is particularly acute for this new generation of student housing, which typically boasts luxury amenities entailing significantly greater upfront and life cycle costs.⁸

In addition to the expectations of their immediate constituents, higher education institutions also must fulfill government mandates and demands of community stakeholders. In certain jurisdictions, the government has stipulated LEED-based performance standards, whereas neighborhood residents' assent to public approvals may be contingent upon addi-



FIGURE 2 - Costs Per Square Foot for Sustainable vs. Non-Sustainable Design
(Source: Langdon, "The Cost of Green Revisited")

tional commitments articulated in benefit agreements.

As a result, higher education construction has become the fastest-growing segment of the green building sector.⁹ While the initial results of these efforts have been mixed, of the 300 colleges and universities whose sustainability programs are evaluated annually by The College Sustainability Report Card, 51 have earned exemplary ratings for their leadership in green building, and 57% have “adopted campus-wide green building policies that specify . . . minimum performance levels.”¹⁰ This third-party rating system, now in its fourth year, offers greater transparency and benchmarks against which to compare the respective performance of schools, which increases the likelihood performance expectations will continue to intensify. Indeed, an institution’s record of commitment to sustainability now is subject to greater parental and student scrutiny in their evaluation of prospective schools. Environmental stewardship, therefore, has become another arena in which colleges and universities vie for prospective students.

PREVAILING LIFE CYCLE COST ANALYSIS METHODOLOGIES & METRIC APPLICATIONS

Colleges and universities, as the leading proponents of green building in the United States, are uniquely positioned to utilize LCCA techniques to best advantage. As long-term owner-occupants and operators, institutions enjoy greater investment longevity than their commercial counterparts and do not have to surpass prevailing industry hurdle rates, enabling them to embrace more innovative approaches. Schools with large real estate portfolios can achieve economies of scale in the retrofitting of existing buildings, new development, and procurement and contracting, based on depth of experience working with providers over multiple projects. In addition, colleges and universities benefit not only from the comparison of actual versus budgeted costs of previously completed projects, but also from the compilation of historic operating costs that in turn increase the accuracy of calculations. Continuous innovation in green building likely will result in the waxing and waning of the green premium as the prices of widespread technologies decline, only to be superseded by revolutionary, higher-cost products in a cycle of creative destruction. Consequently, LCCA will continue to be an indispensable investment assessment tool.

Analytic Category	Metric	Calculation Notes
Simple Payback Analysis	Annual Savings	\sum annual savings (assumes no escalation)
	Straight-line Payback Period	$\frac{\text{Initial Cost}}{\text{Annual Savings}}$ (Base Case vs. Alternative)
	Straight-line Return on Investment (ROI)	$\frac{\text{Annual Savings}}{\text{Initial Cost}}$
Discounted Payback Analysis	Discounted Payback Period (DPB)	$\frac{\text{PV Initial Cost}}{\text{PV Future Savings}}$ (Base Case vs. Alternative)
Net Present Value (NPV)	Net Present Value (NPV)	PV Future Savings – Initial Cost
	Savings to Investment Ratio (SIR)	$\frac{\text{PV Future Savings}}{\text{Initial Investment}}$
Internal Rate of Return (IRR)	Internal Rate of Return (IRR)	Reinvestment at Overall Investment Rate Yield
	Adjusted Internal Rate of Return (AIRR)	Reinvestment at Discount Rate Yield

FIGURE 3 - Existing LCCA Metrics

Approaches employed by two prominent universities and the federal government were examined to derive an LCCA best practices standard. Harvard and Stanford universities consistently have been lauded for their sustainable building endeavors and offer ample documentation of their internal LCCA calculation processes. Harvard employs a rigorous methodology utilizing all of the return metrics mandated by the Federal Energy Management Program.¹¹ Stanford varies the length of the analysis period in accordance with building typology and further refines its investment horizon calculations by using a higher discount rate for analyses spanning five years or fewer.¹² Taking all three methodologies into account yields the compilation of current best practice metrics shown in Figure 3.

VALUE CHAIN-BASED LIFE CYCLE COST ANALYSIS

All of the LCCA metrics enumerated above exhibit two critical deficiencies that compromise their utility as predic-

tive decision-making and project management tools. Hard, soft, and one-time costs are distilled into a single initial investment figure, while anticipated annual savings are treated as definite amounts without consideration of possible price volatility (other than the consumer price index-based inflation rate). As such, existing LCCA techniques omit a critical aspect of financial analysis: sensitivity analysis. Determining return and payback period tolerances to changes in utility costs and components of upfront expenses is vital to proactive project management and capital planning. To rectify these shortcomings, a sensitivity analysis consisting of value chain-based initial cost disaggregation, calculation of probable annual savings, a partitioned rate of return, and incremental investment analysis should be adopted.

The rationale underlying the value chain approach is to quantify the contributions of each individual element affecting the total investment return to determine where the greatest value or



Value Chain Components	
Architectural & Engineering Soft Costs	Additional service costs (whether or not within the contract scope of services) associated with the selection of an option. Cost of consultant services also is included in this category.
Equipment & Materials	Self-explanatory. Captures any cost premiums resulting from insufficient local resources for sustainable materials or disposal/recycling services.
Risk-Adjusted Bid Premium	Reflects inexperienced contractors' tendency to overestimate costs in proportion to perceived risks. Should also take into account the time value of money for delays resulting from the need to alter specifications or conduct value engineering when bids received exceed established budget.
Documentation Cost	Expenses associated with documenting LEED credits.
Commissioning & Monitoring	Although commissioning might otherwise be captured in soft costs or bid premiums, as the single most significant contributor to sustainable design costs, it warrants separate assessment.
Financing & Subsidies	Cost reductions attributable to subsidy grants and/or loan amounts repaid out of cost savings. Should account for leverage ratio and financing cost.

FIGURE 4 - Sustainable Design Value Chain
(Sources: Porter, "What is Strategy?" & Apesche, "Investment Value Chain")

opportunity resides.¹³ Based in part on Kats' and Langdon's classification of the major drivers of green building costs, value chain components are proposed in Figure 4.

Of the six cost drivers identified in Figure 4, the risk-adjusted bid premium is most amenable to cost reduction strategies. As contractors gain greater familiarity with green building technologies and techniques, their contingency allowances eventually will attenuate with increased proficiency and an expanding track record of completed projects. Because universities and colleges routinely add facilities and upgrade existing ones, they can develop a network of preferred contractors. Institutions typically establish long-term relationships with this network over multiple projects, but keep contractors competitive by distributing the award of concurrent projects among different bidders. Institutions can accelerate bid premium reduction by documenting actual contingencies on their completed projects to use in contract negotiations on future projects. Alternatively, if just beginning a green building program, they may benefit by referencing results of comparable projects undertaken by other institutions.

Similarly, to the extent architectural and engineering soft costs reflect inexperience with designing for new technologies, these costs may decrease modestly as expertise becomes more widespread. As with contractors, working with a preferred network of professionals can leverage accumulated experience on past projects to drive these costs down more quickly than in the industry as a whole. It is conceivable that experience also will yield cost savings in the documentation of LEED credits. More importantly, however, if LEED accreditation is not needed or desired, this expense can be clearly identified and eliminated. Additional expenses due to insufficiency of local suppliers and disposal services also will

tend to decline over time with the development of a critical mass of green building projects in the region.

The first four links in the value chain, therefore, offer prospects for cost reduction, either as the result of an institution's own initiative or the general proliferation of green building expertise and availability. Subsidized loans and grants can further alleviate upfront costs, but commissioning and monitoring, reputedly the most costly components of green building alternatives, have the greatest direct impact on annual cost savings over the life of the project. Of the value chain components, it is also the cost center that is least amenable to reduction without sacrificing long-term cost savings. Cost containment of the five other upfront cost drivers, however, can mitigate this otherwise largely fixed expense.

Not only does the value chain highlight potential cost savings strategies, but it also provides a reporting framework to help subsequent users of the data distinguish among those upfront costs that will be applicable to future comparable projects, as opposed to those that may decrease as green building becomes more commonplace. The yield achieved as a result of reductions in the upfront cost components, however, also will depend on the projected cost savings over the investment horizon. The reliability of these projections depends on the accuracy of anticipated operating expenses. Conventional sensitivity analysis computes the effects on returns of percentage increases or decreases above or below values stipulated in the base case. This results in a bounded range of possible return values, but does not offer any insight into the probabilities associated with these scenarios. A more nuanced approach entails determining the probability associated with each potential outcome and then computing a weighted average to determine the probable value.

Sensitivity analysis, with or without calculation of probable values, is essential to LCCA because the default inflation index assumes past trends will continue in the future, and therefore does not anticipate the risk of utilities price volatility. More importantly, the performance of sophisticated energy-efficient buildings depends in large part on commissioning, monitoring, and knowledgeable maintenance personnel. Deficiencies in any of these areas can degrade performance to sub-specification levels, which will significantly diminish anticipated savings and result in protracted payback periods and reduced yields. In practice, some deviation from anticipated performance levels is to be expected at the outset as adjustments are made and staff become more familiar with system operations. Probable operating expense values can be calibrated to account for these “break-in” periods.

The exercise of determining the probability of each possible expense outcome is, in itself, a risk management tool, because it forces project managers to identify and quantify risks internal to the project, as opposed to external risks beyond the control of the project team. This information then can be used to share or, better yet, transfer the risks identified. For example, based on these probabilities, contract incentives and penalties may be structured to offset savings unrealized due to sub-specification performance or, conversely, allow participation in a percentage of savings that exceed expectation. Furthermore, operating expense volatility may prompt a college or university to consider purchasing forward contracts to hedge probable expense spreads that surpass a pre-determined margin. In the event risk transfer is not feasible, at a minimum, using probable values will generate a more realistic operating budget target, provided the underlying amounts and probabilities are well founded.

These more fine-grained initial investment and operational savings figures can be input into the existing LCCA payback and net present value calculation methodologies outlined above. Value chain-based initial cost disaggregation isolates cost drivers accounting for the most significant upfront investment costs, savings in any of which will result in a shorter payback period or higher NPV/IRR/AIRR given the same probable operational savings over the holding period. The resulting information may then inform negotiations with professionals, contractors, and vendors in the course of budget reconciliation. Grants and/or subsidized loans for sustainable features, distinct from project financing, must be accounted for by reducing the upfront equity contribution and subtracting debt service from anticipated savings over the loan term. Determining suitable yield-to-payback period ratios according to both program type and project scale may further refine existing LCCA methodologies.

In the institutional sector, IRR or AIRR calculations treat sustainable design investments and attendant cash flows from savings as if they were a stand-alone investment, separate from the project as a whole. This approach makes the tradeoffs between base case and sustainable alternatives more obvious. Since the so-called “green premium” is a small fraction of total project costs, even significant upfront or operational cost savings will produce only meager yield increases. The impact of any individual sustainable design element on overall project returns, therefore, will be virtually imperceptible.

Private sector developers and investors, particularly of for-sale properties, typically will realize less direct benefit from long-term operational cost savings since many or all of these expenses typically are passed through to buyers or tenants. Nevertheless, green buildings

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can command higher rents and sale prices, increased leasing and sales velocity, and higher occupancy/lower turnover ratios. The magnitude of the resulting increased cash flows in investment returns (including any direct savings accruing to the owner) can be discerned by comparing base case and “sustainable case” partitioned IRRs. For the base case, calculate the present value of the future operating and reversion cash flows by discounting them at the internal rate of return (IRR), then sum the present value of the operating cash flows and compute it as a proportion of total project cash flows (operating income plus reversion value).

In the sustainable case, by contrast, the same procedure outlined above for calculating the present values of the future operating and reversion cash flows should be followed, but it is also essential to account for the green building contribution to reversion value by com-

puting the operating cash flow differential between the base and sustainable cases in the terminal year, capitalizing this amount at the overall cap rate, and discounting the capitalized figure to a present value using the internal rate of return. This sum then is added to the sustainable case operating cash flows to determine the yield impact of the sustainable alternative as shown in Figure 5.

The partitioned IRR calculation is most germane in the private sector, where disposition usually is anticipated as part of the return analysis, whereas institutional owner-occupants base investment decisions on indefinite ownership. Private sector developers and investors can combine payback analysis with partitioned IRRs to identify green building strategies that not only generate savings offsetting initial costs, but also increase overall yield, albeit modestly. The discrepancy between green building premiums and the effect of these additional features on

BASE CASE PARTITIONED IRR	Cash Flow	Present Value (discounted @ 15% IRR)	Operating vs. Reversion Cash Flows as % of Total Return
Operating Cash Flow			PV Operating Cash Flow =
Year 1	\$1,000,000	\$869,565	\$3,654,625
Year 2	\$1,050,000	\$793,951	PV Total Cash Flow =
Year 3	\$1,102,500	\$724,912	\$11,209,140
Year 4	\$1,157,625	\$661,876	
Year 5	\$1,215,506	\$604,321	Operating Cash Flow = 32.6%
Reversion Value	\$15,194,828	\$7,554,515	Reversion Cash Flow = 67.4 %

SUSTAINABLE CASE PARTITIONED IRR	Cash Flow	Present Value (discounted @ 16% IRR*)	Operating vs. Reversion Cash Flows as % of Total Return
Operating Cash Flow			PV Operating Cash Flow =
Year 1	\$1,100,000	\$948,276	\$3,286,867
Year 2	\$1,155,000	\$858,353	PV Operating Cash Flow Differential Year 5 (Capped) =
Year 3	\$1,212,750	\$776,958	\$723,399
Year 4	\$1,273,388	\$703,281	PV Total Cash Flow =
Year 5	\$1,337,057	\$637,567	\$11,880,835
Reversion Value	\$16,713,211	\$7,957,377	
* IRR computed after adjusting initial investment to reflect 5% cost increase over base case and 15% operating cost savings = 10% increase in operating cash flow			* Sustainable Case Cash Flow = 33.75% Base Case Reversion Cash Flow = 66.25 %
* Sustainable Case Cash Flow therefore equates to a 5.40% IRR versus a 4.89% IRR for Operating Cash Flow in the Base Case → 0.51% IRR spread			

FIGURE 5 - Partitioned IRR Calculations

investment returns highlights the greater pressure on sustainable alternative upfront investments in the private sector, where higher discount rates diminish the value of future operating and reversion cash flows relative to first costs.

In the private and institutional sectors alike, embedding sustainable design initial costs and the resulting operating period savings in overall project return calculations trivializes the impact of sustainable design decisions since the cost and savings components are negligible in relation to total project costs and cash flows. By utilizing incremental investment analysis in conjunction with the aforementioned methodologies, however, it is possible to assess costs and benefits at the scale of the additional investment.

To do so, the additional cost of the sustainable element(s) is input as an initial cost (CF₀); annual savings are represented as periodic cash flows (CF_j); and the reversion value component attributable to capitalizing the additional income derived from the sustainable feature(s) is accounted for by adding it to the final year's cash flow (CF_j). Following the example above, the benefit of the incremental investment is computed in Figure 6 below.

Holistic analysis reveals, the additional investment in sustainable design pro-

duced a meager 100-basis point increase in the overall yield, and a 51-basis point increase in the return attributable to sustainable case cash flows. By contrast, incremental analysis demonstrates that the sustainable feature generated a 36% return as a stand-alone investment. On purely financial grounds, the 100-basis point overall return increase might not be sufficiently compelling to warrant the additional cost, but by isolating the incremental investment, it is apparent the additional initial cost generates a return that would rival any alternative investment.

In addition, in addressing opportunity cost of capital considerations in sustainable design decision-making, incremental analysis also is useful from a portfolio management standpoint. In determining allocation models, diversification objectives place limits on the amount that may be concentrated in any one investment. If the adoption of sustainable features risks exceeding this threshold, the investment nevertheless may be justified if incremental analysis reveals the additional investment can generate a higher return than competing opportunities.

Incremental investment analysis, therefore, may induce the private sector to aspire to sustainable design standards on par with the institutional sector by elucidating the discrete return potential of additional spending. If these metrics

Initial Investment	CF ₀	(\$560,191)
Annual Cost Savings	CF _j	\$100,000
	CF _j	\$105,000
	CF _j	\$110,250
	CF _j	\$115,763
Final Year Cost Savings + Sustainable Reversion Value	CF _j	\$121,551 + \$1,519,386
IRR		36.03%

FIGURE 6 - Incremental Investment Analysis

also were to capture increased revenues from higher rents, higher occupancy rates, shorter lease-up periods and increased tenant retention, in addition to operating expense savings, a sustainable design investment that otherwise might have been deemed discretionary, instead would become an imperative.

APPLICATION OF VALUE CHAIN-BASED LIFE CYCLE COST METRICS

Colleges and universities can facilitate further reductions in initial costs for green building alternatives by exerting their individual and collective market power. Individual institutions can harness the LCCA methodologies proposed herein on a project-by-project or portfolio-wide basis to:

- Educate contractors about sustainable building practices to reduce risk aversion, risk-adjusted bid premiums, and the likelihood of bids exceeding budget parameters
- Focus value engineering efforts on specification changes to reduce hard costs or negotiation to bring soft costs into compliance with the budget, as appropriate
- Modify contracting and procurement standards in accordance with refined data and use purchasing power to persuade vendors to meet capital expenditure approval benchmarks
- Quantify and manage the risks of the building not operating according to specification and structure appropriate incentives/penalties to ensure unrealized savings do not compromise loan repayments or university operating budgets

The experiences of colleges and universities on individual projects can also be compiled and shared by sector coalitions to further advocacy on a variety

of issues. LCCA data can demonstrate the necessity of continued subsidies. In conjunction with preserving access to funding, this information can also be harnessed to lobby the industry for cost-saving innovations that will result in widespread adoption of green building practices. The resulting increased demand will improve economies of scale and reduce prices to marginal costs. Sector-wide LCCA data also provide a framework for regulators considering enacting sustainable design mandates and for community activist organizations negotiating community benefit agreements. Finally, the pioneering work of the university green building vanguard can be adapted for use at less-well-endowed institutions, as well as in the commercial sector, to promote implementation of sustainable design practices and improved outcomes.

In the short-term, institutional green building metrics can assist private sector developers and investors to select cost-effective schemes by providing reliable initial cost and operating period performance benchmarks. In the long-run, however, colleges and universities can leverage their comparatively greater bargaining power to eradicate much of the perceived or actual “green premium,” thereby making a broader array of sustainable building strategies financially feasible for the real estate industry as a whole. The methodologies proposed herein for private sector application will enable developers and investors to recognize the turning point at which green building benefits yield commensurate investment returns due to initial cost diminution. ■

ENDNOTES

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12. Stanford, 18. The lower discount rate utilized for six or more years reflects a higher nominal rate less a higher rate of inflation.
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Architecture & Enterprise: A History, Practice, and Analysis of Architectural Extensions into Real Estate¹

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Enterprising architects who integrate the roles of owner/developer and designer develop the necessary knowledge and expertise, and assume functions and risk, typically considered beyond the realm of architecture in order to improve the built environment. Historic exemplars are profiled and current models of practice analyzed in order to distill lessons for other design professionals seeking to expand their capacities.

INTRODUCTION

The American Institute of Architects (AIA) was established in 1857 and “promotes the cohesion of the architecture profession and enables architects to better serve their clients and improve the built environment.”² This organizational statement reflects the underlying loyalty of many practitioners central to this research. They are architects first and foremost. There is, however, a noteworthy concept embedded in the statement: the emphasis is on improving the built environment via service to clients. Similarly, the AIA report “The Business of Architecture” distills data drawn from architects about their practices, and further reflects the way the profession sees itself. The title of the report yields an obvious question: what precisely is the business of architecture? Is it the same or different than the business of practicing architecture? Does it oblige architectural services rendered to third-party clients? While this warrants a larger discussion that isn’t fully addressed here, it points to a distinction in the way enterprising architects seek to improve the built environment. When architects begin to incorporate expertise in real estate specifically, it could be argued that they are

leveraging their business of practicing architecture by a move into the business of architecture. This is the central focus of this study—the integration of practice and business, design and investment, architecture and enterprise.³

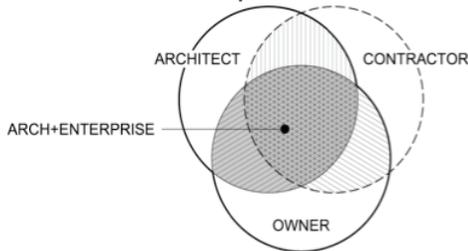


FIGURE 1 – *Architecture and Enterprise, or the integration of architect and owner are central to this research, though the integration of construction at times is a factor.*

In order to effectively evaluate the merit of this integrated approach, it is critical to set aside the perennial image of both architect and real estate developer. It is often held, in light of common stereotypes, that the designer is an image-driven artist primarily concerned with the appearance of a building and minimally concerned with the financial performance of the investment. It is also believed that the real estate developer is a financially-driven profiteer with little care for design and architectural innovation. In this oversimplified dyad, the designer wants to do what has never been done no matter the cost, and the developer

wants only to do what has been done at minimal cost. If these hold true, there is little common ground between these parties and little to no opportunity for a productive integration of roles. However, these are often simply stereotypes that many in the development, design, and construction industries have moved beyond, evidenced through widespread project and business-level collaboration. Those enterprising architects that choose to integrate are doing so by taking on the necessary knowledge, expertise, functions, and risk that is generally considered outside the practice of architecture in order to better accomplish their architectural aim—to improve the built environment.

HISTORIC PRACTITIONERS

The integration of architectural practice and real estate enterprise extends back centuries, though it is not an established part of the architecture profession’s historical narrative. While such distinct business activities as occur in architecture and real estate are often separate businesses, there are a substantial number of current and past architects who have incorporated real estate activities in their practices. Among the ranks of enterprising architects are John Wood the Elder and Younger, The Brothers Adam, John Nash, Otto Wagner, Luis Barragan, and

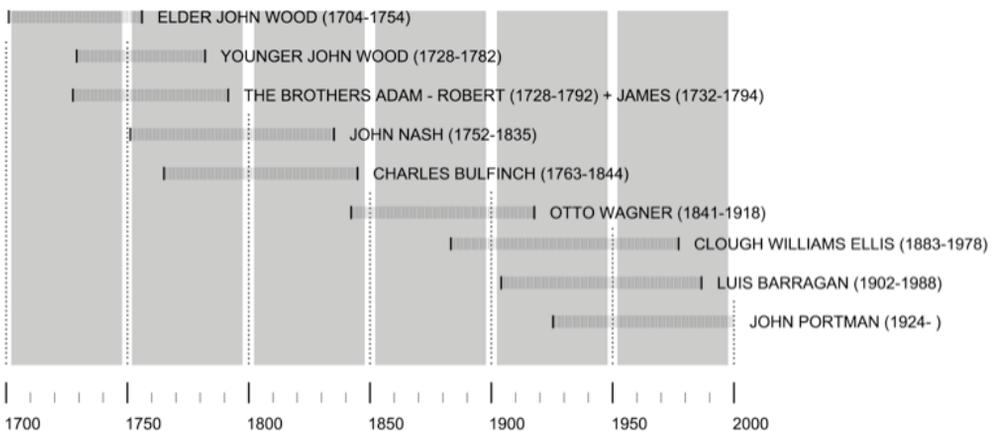


FIGURE 2 – *Timeline of Historic Practitioners Engaging in Real Estate.*

John Portman. Among the more recent practitioners are Randy Brown, Bruner Cott, KRDB, Sebastian Mariscal, and Jonathan Segal. Many of these architects were responsible for conceiving, designing, and investing in many successful—and some unsuccessful projects.

OTTO WAGNER - "IN HIS PUBLICATION 'A FEW SKETCHES, PROJECTS AND EXECUTED BUILDINGS' (1889), [WAGNER] DEVOTED THREE PAGES TO [STADIONGASSE]. IN THE EXPLICATION OF HIS DRAFT SKETCH FROM 1882, WAGNER POINTS TO THE 'PRACTICAL GROUND-FLOOR ARRANGEMENT THROUGH WHICH THE RESIDENCES WERE CONCEIVED WHICH BOTH SUITED THE RESIDENTIAL NEIGHBOURHOOD AND ATTRACTED TENANTS.' A GOOD ARCHITECTURAL DESIGN AND GOOD RENTAL CONDITIONS WERE THUS INTERRELATED. THE VALUE OF CONSTRUCTION INCREASED PRECISELY THROUGH QUALITY AND USEFUL ARCHITECTURE. WAGNER'S FUNDAMENTAL CONCEPTION OF AN ALLIANCE BETWEEN BEAUTY AND INSTRUMENTALITY ALREADY APPLIES..."⁵

The preceding selection of practitioners engaged in the conception, design, and delivery of speculative building projects at some point in their ca-

reers. Today, a number of these men and their work are a standard part of the historical architectural narrative, but most commonly as protagonists in the narrative of design theory. Although some of these practitioners contributed much to architectural discourse and the intellectual engine behind it, there is still more to glean from a review of their activities, particularly those in the realm of real estate. Indeed, the energized entrepreneurship with which these men engaged their fields is too often a secondary part of the story. And given the current state of the architecture profession, it is a particular side of architectural history that is due additional exploration.

There are a number of key conclusions to be drawn from the activities of these architects. First, one can see the broad range of capacities in which these architects engaged real estate development. John Wood the Elder, for instance, initially functioned as an agent for landowner Robert Gay and then moved into a more primary role by securing a land lease to develop Gay's property.⁴ Robert and

James Adam were directly involved in the conception, financing, construction, and promotion of their street schemes. John Nash functioned as an agent, investor, and advisor to clients and the Crown during his professional career. Charles Bulfinch and Luis Barragan both formed partnerships to take on their developments. Sir Clough Williams Ellis and John Portman conceived, designed, developed, and operated the business that leased their buildings. And Otto Wagner conceived, constructed, and leased his own projects. This represents a much more expansive range of activities than the commonly-identified "architect as developer" model.

First, these practitioners took a sequence of key steps: integrate expertise; form strategic partnerships; and take on investment risk when necessary. Second, it should be noted that their method of operation was mostly dictated by their values. Each of them, in addition to financial returns, aimed to bring something uniquely valuable to the marketplace. Third, John Nash, Charles Bulfinch, and John Portman demonstrate that the integration of diverse roles can lead to a complicated set of identity conflicts and ethical challenges. Fourth, these professionals and their work also prove that design in-

novation and investment performance are not inversely proportional. While this research does not pretend to sufficiently analyze the quality of their work, one must acknowledge

JOHN PORTMAN - "'MY MAIN INTEREST IS IN ARCHITECTURE. I HAVE BECOME INVOLVED IN DEVELOPMENT IN ORDER TO INCREASE MY ABILITY TO DO WHAT I WANT TO DO AND FEEL I SHOULD BE DOING...YEARS AGO, WHEN I FIRST STARTED ACTING AS MY OWN CLIENT, THE AIA QUESTIONED ME ABOUT THIS. IT BOILS DOWN TO THE FACT THAT I AM A BUILDING OWNER—THE CLIENT—AND I AM THE ARCHITECT. WHY SHOULD I NEED TO PROTECT MYSELF AGAINST MYSELF? I HAVE NO SUCH CONFLICT OF INTEREST AND NO PROBLEM IN SERVING THE CLIENT...I DO NOT OWN A CONSTRUCTION COMPANY OR INVOLVE MYSELF IN ANY BUILDING PRODUCTS. I ALSO WORK FOR CLIENTS OTHER THAN MY OWN DEVELOPMENT COMPANY. THE AIA UNDERSTANDS THIS AND HAS NO OBJECTION.'"⁶

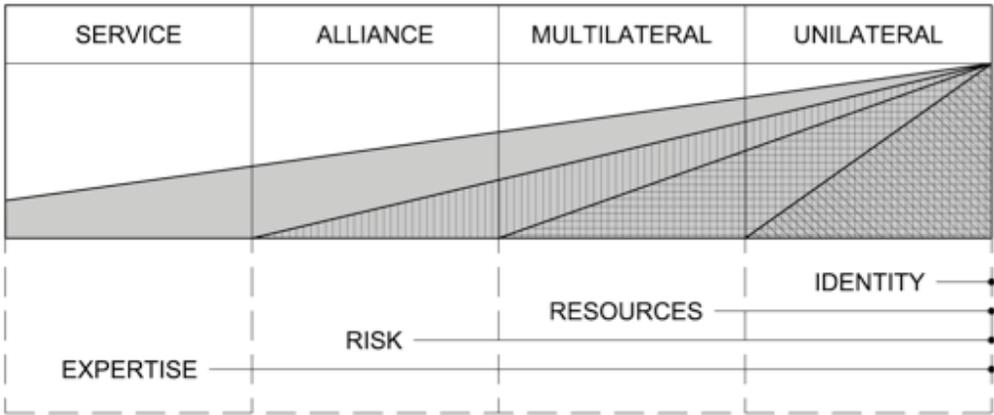


FIGURE 3 – Illustration of proposed models of integration based on real estate expertise, project risk, organizational resources, and organizational identity. Note, each model does not inherently assume a complete integration of associated factors, though each model builds on prior integrated factors.

the architectural contributions made by these practitioners, often in a profitable fashion.

In short, these practitioners were able to deliver a product more consistent with their vision than they could through traditional practice. Finally, these architects provide an indication of the potential for substantive success through some form of integration. As these issues are sifted from history, it is necessary to consider a framework that can better inform the current practice of enterprising architecture.

CURRENT MODELS OF PRACTICE

The following models of practice have been identified in the current professional context through literature review, primary research, and practitioner interviews. Each of these models of practice can be classified by the degree to which they integrate expertise, risk, resources, and identity.

These models, and the firms that exemplify them, demonstrate the broad range of options within this integrated frame-

	SERVICE	ALLIANCE	MULTILATERAL	UNILATERAL
INCOME BASE	FEE ONLY	FEE PRIMARY	FEE/EQUITY	EQUITY PRIMARY
RISK/RETURN	LOW	MODERATE	HIGH	HIGH
AUTONOMY	LOW	MODERATE	MODERATE	HIGH
PRODUCT DIVERSITY	HIGH	MODERATE	MODERATE	LOW
GEOGRAPHIC RANGE	HIGH	MODERATE	MODERATE	LOW
FIRM SCALABILITY	HIGH	HIGH	HIGH	LOW
FIRM ADAPTABILITY	MODERATE	MODERATE	HIGH	HIGH

FIGURE 4 – Key implications of proposed models of integration. Low, moderate, and high represent the degree to which factors apply to a given model.

LUIS BARRAGAN - "I CAME TO MEXICO TO WORK IN 1936. AND THEN FRANKLY I STARTED WORKING AS AN ARCHITECT, GETTING COMMISSIONS FOR HOUSES, SOME BUILDINGS NEVER BIG THINGS. UNTIL IN 1940 I REALIZED THERE WAS MORE MONEY TO BE MADE ON REAL ESTATE, HELPING THE CLIENT TO FIND THE SITE AND PASSING THE COSTS INCLUDING THE PROFESSIONAL FEES (FOR THE DESIGN). I HAD BECOME VERY DEMORALIZED BY MOST CLIENTS, BECAUSE THEY WOULD MAKE USE OF THE PROJECTS WITHOUT PAYING THE PROPER HONORARIUM OR THEY WOULD TALK TO YOU WITH A PATRONIZING TONE, AS IF THEY WERE DOING YOU A FAVOR BY GIVING YOU WORK, WHICH MEANT ALMOST ALWAYS DEALING WITH A NUMBER OF DEFICITS AND HUMILIATING MEANNESS...THE CONCLUSION: EARN LITTLE MONEY; GIVE A LOT OF SERVICE AND SPENT UNPLEASANT MOMENTS WITH CLIENTS. So I GAVE UP THE PROFESSION IN 1940. I DEDICATED MYSELF TO SPECULATING WITH REAL ESTATE..."

work. The *S e r v i c e* model describes a firm that still relies on a fee-for-services-based income, but has internalized a level of expertise in real estate development that differentiates them from traditional architectural

counterparts. The *Alliance* model describes the same type of firm that also takes on certain project risks through partnerships, such as exchanging fee-based income for an equity stake in a given project. The *Multilateral* model represents a group of organizations that share certain expertise, risk, and resources and often act in concert. The *Unilateral* model denotes the organization that most fully integrates expertise, risk, resources, and identity with the ability to act independently on projects.

Naturally, there are tradeoffs to be recognized in pursuing one model versus others. First, it should be noted that the multilateral and unilateral models entail higher risk and return compared to other models. Likewise, they are based primarily on equity income as opposed to fee-for-services income. Second, the autonomy concept recognizes the ability of an organization to act independently, as it has internalized a broad range of competencies and activities, and can operate with relatively less dependence on other firms. Third, product diversity and geographic range reflect the estima-

tion that a firm of a given size will have greater ability to take on a more diverse range of product types in a broader geographic area when their activities are limited to services. Alternatively, the highly-integrated models necessitate a broad range of in-house activities that can limit the firm's ability to take on diverse product types with an extensive geographic reach. There are certainly exceptions, but the practitioners studied conform to the issues matrix. Firms of any substantial size more commonly follow the service, alliance, or multilateral models, whereas the unilateral model is commonly witnessed in small firms.

Although this research does not extensively address the possibility of adaptability over time, it is estimated that those firms that incorporate a full range of activities set themselves apart in their ability to adapt to a given project or economic climate. While a decision to embrace a certain model may be influenced by other factors, one should recognize the general limitations presented above. It is important to remember that while these models are drawn from historic and current models of practice and provide meaningful insight into the distinct ways that one could organize an integrated real estate and architecture business, they are not always bright distinctions. Firms and practitioners can find themselves moving across these boundaries over time, or on a specific project, for any number of reasons. Practitioners should understand the implications of each model in order to make informed decisions about the way they integrate, operate, and market their organizations.

LESSONS FOR THE ENTERPRISING

In a review of current and past practices, certain key conclusions are evident. First, the way the profession of architecture constructs its historical narrative reinforces a narrow conception of practice. This is evident in the emphasis

on design and theory at the expense of issues such as project finance and delivery. Second, the profession at large stands to gain from integrating a basic level of real estate expertise, even if many are not prepared to take on real estate investment risk. Clearly the profession is a stakeholder in the real estate industry — indirectly sharing industry risk — and would be wise to leverage an expanded knowledge of real estate in making decisions. Third, for those that do pursue a hybrid enterprise, a clear vision and definition of purpose is essential. The following objectives have been integral vision components for current and past practitioners: environmental; economic; urban; social; theoretical; and typological objectives. Fourth, there are significant costs and benefits associated with integration that must be considered, even though many of these are difficult to quantify. Some of the significant issues that elude quantification are expanded organizational independence, effects on marketplace image, and achievement of certain professional objectives. Fifth, those architects that engage in the real estate marketplace as speculators must recognize their relative strength in product differentiation compared to those firms primarily operating a real estate enterprise. Competing on a low-cost basis does not appear to be a likely path to success. Sixth, professionals must gauge their underlying loyalty to the traditional model of practice, given the peculiar

KRDB - "KRDB [IS AN] INTEGRATED DEVELOP-DESIGN-BUILD FIRM THAT WAS FOUNDED IN 2001 FOR THE VERY PURPOSE OF MAKING ARCHITECTURE MORE ACCESSIBLE, FINANCIALLY AND INTELLECTUALLY." PRINCIPAL CHRIS KRAEGER EXPLAINS THAT VERTICAL INTEGRATION IS A KEY PART OF THIS STRATEGY. "WE GO OUT THERE AND IDENTIFY PROJECTS, LAND, FUTURE ENTITLEMENTS, DESIGN THE PROJECTS AND BUILD THEM AS WELL. WE MAINTAIN BOTH CREATIVE AND ECONOMIC CONTROL AND ANALYTIC CONTROL OF THE PROJECTS...WE REALIZE THAT IN ORDER TO ACHIEVE THIS [MISSION] IT SEEMED NECESSARY TO MAINTAIN THE KIND OF CONTROL OVER THE PROCESS..."⁸

con-flicts that are present when conducting in-house development in conjunction with design services for third-party clients.

CONCLUSION

Both historic and current practitioners demonstrate the viability and value in integration. The traditional practice of architecture as a consultant to a client will and should continue to be the primary avenue for architects to contribute to the built environment. There is opportunity, however, for those in the profession committed to this traditional form of practice to embrace a more extensive range of their client's interests, and incorporate practical expertise in real estate as an integral part of the architect's competency. Many historic and current practitioners have demonstrated an enhanced ability to serve their clients more effectively through this expanded capacity.

For some professionals, the traditional method of project delivery simply does not provide sufficient opportunities for them to make the contribution they intend. These practitioners may find attractive alternatives by internalizing not only real estate expertise, but also activities. What's clear — from having studied and interviewed a number of practitioners — is that the profession lacks a rigorous framework for understanding and organizing the issues inherent in such hybrid organizations. Through the course of this study, clear and relevant models emerged that give more definition to the organizational variations available to potentially-integrated practices. These models provide a relevant framework that allows architect-practitioners interested in the integration of real estate exposure to a broader range of associated opportunities.

Professionals have an opportunity to distinctly integrate real estate expertise, project risk, organizational risk and resources, and organizational identity; their choice among these options should, and can, be grounded in their organizational vision and strategy. While it is

difficult to predict the growth that may occur in integrated practice models, there continue to be opportunities for a select few to take on the entrepreneurial challenges associated with conceiving, designing, and implementing their vision for the built environment. ■

ENDNOTES

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8. Chris Krager, interview by author, February 12, 2009.

The Future of Retail Real Estate in India?

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MANAGEMENT, 2009

Growth of the Indian national economy has been paralleled by increased consumer retail spending, yet the proliferation of shopping centers has been hindered by poor infrastructure, inadequate architectural standards, and haphazard location selection. With many foreign brands seeking entry into this market, a new prime location shopping center typology is needed that combines the best features of traditional bazaars and contemporary lifestyle centers.

One of the biggest challenges for any Western retailer expanding to India is to find real estate to match business expectations and brand value. In the last few years, many retailers have tested the waters, but quite a few have curtailed their expansion plans due to a lack of infrastructure and poor retail real estate options. Many have opted to wait a few more years until reasonable solutions are available. This article is an excerpt from my thesis on creating an India-focused real estate private equity fund to invest in a portfolio of a new breed of mixed-use retail centers. These centers could provide the much-awaited solution that many Western retailers seek.

The article begins by exploring why global investors should invest in India. It gives an overview of the Indian retail industry, then takes a closer look at existing real estate options and the challenges they present. It further proposes a solution in the form of a mixed-use retail center concept.

WHY INDIA?

In the last twenty years, India has emerged as one of the most promising nations in shaping the contours of the world economy. Today, India is a pre-

ferred investment destination for all major corporations of the world. Despite the global economic crisis, India's gross domestic product (GDP) has been steadily between 7 and 8 percent. The consistently strong GDP can be attributed, in part, to India's changing demographics and social trends. India is among the world's youngest nations, with a median age of twenty-five years, compared to forty-three in Japan and thirty-six in the United States.¹ According to a study by the McKinsey Global Institute (MGI), India's middle class will grow to over ten times its current size of 50 million to 583 million people by 2025. The last two decades have seen a strong transition in the typical Indian consumer. The average consumer mindset has shifted from affiliation to individualism, from connoisseurship to taste/discernment, from 'reckless' consumption to 'considered' indulgence, and from utility-based products to experience-based products.² The combination of these factors contributes to many promising opportunities in different sectors of the market, including retail.

and providing employment to 8 percent of the nation's workforce. India's retail market has experienced enormous growth over the past decade, with the most significant period of growth between 2000 and 2006, when sector revenues increased by about 93.5 percent, which translates to an average annual growth of 13.3 percent.⁴ Recently, growth potential for India's retail has been widely acknowledged both in the domestic as well as international forums. The economics of Indian consumerism is buoyant, with India ranking as the fourth largest economy in terms of Purchasing Power Parity (PPP), next only to the United States, Japan, and China. With 54 percent of Indians under the age of 25, the young Indian consumer is buying big to look good and feel good.⁵ The share of retail trade in the country's GDP is currently around 12 percent, and is likely to reach 22 percent by 2010.⁶ India's overall retail sector grew to US\$300 billion in 2007, US\$365 billion in 2008, and is likely to grow to US\$450 billion by 2015.⁷

WHY RETAIL?

Retail is one of the core sectors of the Indian economy,³ contributing about 10 percent of the gross domestic product

All these factors will fuel growth in the retail sector, which in turn will be expected to raise demand for quality real estate for the retail sector (Exhibit 1).

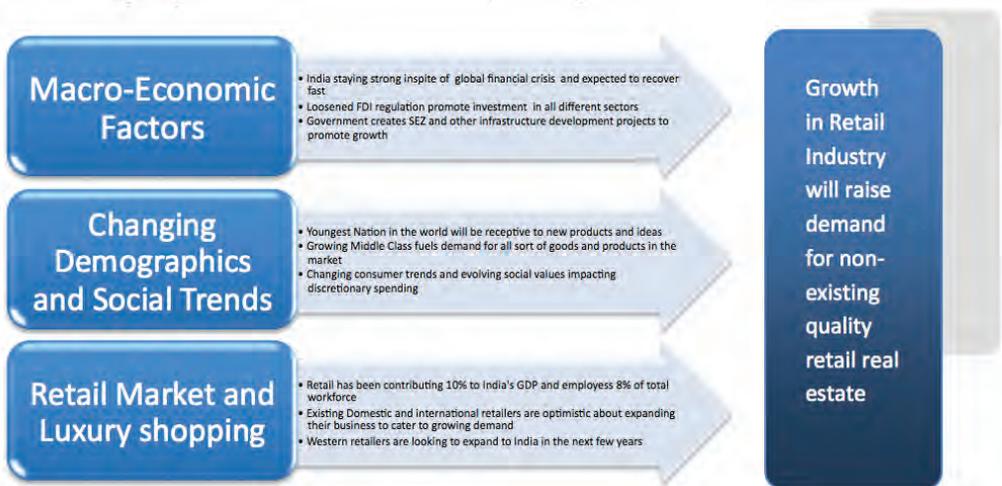


EXHIBIT 1 - Factors Contributing to the Growth of Retail Real Estate in India

WHY RETAIL REAL ESTATE?

Retail real estate in India can be classified into three categories: High Streets; Shopping Malls; and Shopping Arcades at five-star hotels.

HIGH STREETS: For many centuries India has been famous for its traditional markets, “bazaars and fairs,” which have served as a crossroads for retail and wholesale trade, barter, and entertainment – much like a souq⁸ in the Middle East, or the Grand Bazaar (Kapali Carsi) in Istanbul.

Markets like Chandani Chowk in Delhi and Crawford Market in Mumbai are some of the oldest examples of bazaars (Exhibit 2). These traditional markets have had a pivotal place in India’s history, and in contemporary times have metamorphosed into shopping streets, roads, and junctions in big and small Indian cities. Some of these markets command exceptionally high rents. For example, New Delhi’s small Khan Market was recently ranked among the world’s most expensive retail real estate, where monthly rental is 1,200 rupees (\$25) per

square foot, higher than much-better-equipped retail areas in Amsterdam and Stockholm.⁹ Ironically, despite these high rents, these high streets face tremendous challenges in terms of poor building construction and insufficient public infrastructure, such as broken sidewalks, a lack of public restrooms, frequent power cuts, traffic jams, illegal parking, unpleasant weather conditions, and blatant poverty.

SHOPPING MALLS: Shopping malls were introduced in India near the end of the 1990s and instantly became successful. They had something to offer everyone in the family – as evidenced by their packed parking lots, busy food courts and restaurants, crowded anchor stores, and noisy gaming arcades (Exhibit 3).

From their inception, shopping malls reflected the state of society and acted as agents of change. They provided an imaginary world that provided an escape from the city’s potholed roads, broken and dirty sidewalks, rowdy traffic, and extreme poverty. The malls gave the average Indian a perspective on a rich man’s world with multi-screen cinemas,



EXHIBIT 2 - Khan Market and Chandani Chowk
(Source: Google Images)



EXHIBIT 3 - Mall in Delhi

restaurants, games and name brand shops – all well out of the reach of most of the country’s one billion people.

In 1999, there were three shopping centers in the entire country, by the end of 2008, the number had grown to 120, with another 500 malls in the pipeline. As with any new concept, shopping malls experienced a steep learning curve over last decade. The present breed of malls



EXHIBIT 4 - Malls in Gurgaon within 2-Mile Radius
(Source: Google Maps)

A. PVR CINEMAS

Mehrauli Gurgaon Marg, DLF Phase 2,
Gurgaon, Gurgaon, Haryana
India - 0124 4295955

B. CENTRAL MALL GURGAON

Near Iffco Chowk, Ness Tower, MG Rd
Gurgaon, Haryana 122001
India - 0124 2859000

C. AMBIENCE MALL

Nathupura Village. NH8 Highway
Near Toll Plaza, Ambience Island
Gurgaon, Haryana 122001
India - 0124 4665353

D. ANANTAM

Gurgaon, Delhi 122001
India - 0124 4103648

E. DLF STAR MALL

NH8. Gurgaon, Gurgaon, Haryana
India - 0124 4295955

F. TARUN STORE

Sadar Bazar, Jain Mandir, Gurgaon, Haryana
India - 0124 2321259

G. CITY CENTRE MALL

City Centre Mall, DIF City, Mahatma Gandhi Rd.
Gurgaon, 122002. India - 0124 2386297

H. GURGAON SHOPPING MALLS

South City - 1, 119 1st Fl. South City Arcade.
Gurgaon, Haryana. India - 0124 4295955

I. PVR SHARA MALL

Mehrauli Gurgaon Marg.
Gurgaon, Haryana. India - 0124 4295955

J. DT CINEMAS

Sushant Lok, Gurgaon, Haryana.
India - 0124 4295955

presents several challenges. Most malls do not follow international architectural standards and thus have inadequate parking and improper loading docks, which cause inconvenience to customers and retailers alike. In addition, following the overwhelmingly positive customer response to initial malls, developers built in close proximity to existing malls, irrationally overlooking demand and supply ratios, which resulted in cannibalization, exacerbating the other problems (Exhibit 4).

SHOPPING ARCADE AT FIVE-STAR HOTELS: For a long time, most western retailers tested the Indian market by opening stores in the shopping arcades of five-star hotels, because the hotels provided adequate infrastructure, aesthetics, and an environment consistent with the retailer’s brand image. The shopping arcades attracted a high-end customer base (Exhibit 5), but sales have been limited due to low foot traffic, as shoppers mostly comprise tourists and avid brand-loyal customers. There are few to no impulsive buyers.

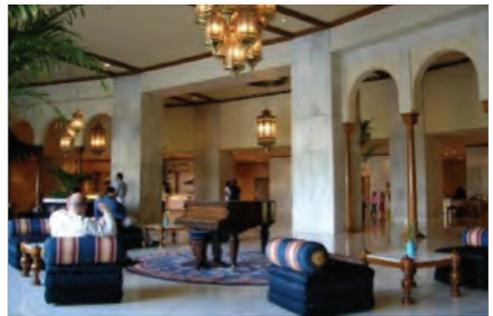


EXHIBIT 5 - Shopping Arcades at Five-Star Hotels in India
(Source: Google Images)

More recently, many leading global brand marketers have started taking the Indian market more seriously and are on the lookout for quality retail real estate that caters to their brand requirements. While India is in the midst of a mall-building boom, there are very few upscale shopping centers in which companies can showcase their products alongside those of similarly chic retail neighbors.

Exhibit 6 outlines the pros and cons of each of these real estate options.

SOLUTION: Filtering the positive features

visiting and seeing retail brand evolution on these streets. Second, it needs to be designed and built to international standards, similar to the lifestyle center concept. Being open to the sky, it will blend well with the character of an existing high street, but will still provide a clear buffer in its design, so as to provide a visual and experiential transition for visitors from the street to the project. Third, it will provide working lofts in addition to lower-floor retail. This will help attract a diversified clientele and foot traffic to the project at different times of the day and week. For the developer and capital

	Pros	Cons
High Street	<ul style="list-style-type: none"> • Central location • Existing credibility with retailers, local shoppers and tourists • Consistent with Indian Bazaar feel 	<ul style="list-style-type: none"> • Poor Infrastructure - Managed by local municipalities • No architectural character • On your phase poverty • Individual stores owned by individual landlords
Shopping Malls	<ul style="list-style-type: none"> • Protection from weather and street chaos • Different activities for every member of a family 	<ul style="list-style-type: none"> • Lack the traditional India bazaar feel • Malls cannibalizing over each other • Improper tenant mix • Not standards or specifications • Not built in best locations in city • Serves more as destination
Shopping Arcade at 5-star Hotels	<ul style="list-style-type: none"> • Best available infrastructure • Ambience at par with brand image of the retailers • Exclusive buyer experience 	<ul style="list-style-type: none"> • Lack foot fall, as mainly tourist and few local shoppers will visit hotels for their retail needs • Do not offer variety of retail offerings for entire family • Destination driven with few impulsive buyers

EXHIBIT 6 - Summary of Pros and Cons of Existing Retail Real Estate Options

of each option suggests an ideal option could be to capture the location and credibility of high streets, the convenience and experience of a mall, and the infrastructure and ambience of the five-star shopping arcades. A mixed-use, open retail center or “the project,” as defined below, could be a possible solution.

First, the project needs to be located in proximity to existing high streets that have unrivaled credibility and a loyal customer base, many of whom grew up

investor, this provides a hedge against the difference between retail and office market cycles.

Based on a country-wide analysis of the best residential and commercial real estate, the author has identified the top high streets in the country and proposes to build a portfolio of twelve retail centers over a five-year span. Exhibit 7 shows the map of one of the shortlisted high streets in Mumbai – Breach Candy – with all its retailers and its operational information.

Exhibit 8 summarizes the key features of all 12 highstreet markets. This information provides best practices and several design and operational parameters for the project.



EXHIBIT 7 - High Street - Breach Candy, Mumbai

THE PROPOSED PROJECT

The project will include five components: two buildings for high-end retail, Class A office, and live/work loft space; open food courts with cafes, bistros, and restaurants; a free-standing anchor store with a gaming arcade above; and kiosks for the sale of local handicrafts. The tenant for the free-standing anchor building would be a store such as Barnes & Noble or Borders. See Exhibit 9 for reference images.

Ten kiosks will be strategically placed in the center so as to create and main-

Key Features	Observations	Take-Away for the Project
Operational Since	95% very old buildings, No New Format/ no character/ Poor infrastructure	• Need new buildings with unique and recognizable character
Spatial Layout	Mostly Linear	• Easy to organize new mall along linear street
Shop Format (Sq ft)	Average sizes 1500 SF to 6000 SF	• Recommended sizes= 1500/ 3000/ 4500/ 6000 SF
Shop Efficiency (%)	Highly Efficient format	• Demand for more organized formats
Car Parking Charges (per hr)	Cheap but unorganized/ unsafe parking	• Customer can afford expensive parking for more safety and convenience
Positioning	Best of its kind in city	• Create tenants to complement existing retail
Closest New Format Mall	Few or none new malls in vicinity	• Need for new malls in vicinity
Managing Agency	None is owned or managed by private entities	• Need for privately owned and managed to provide quality service
Accessibility	Generally good accessibility within city	
Entertainment Avenues	Already plenty of cinema, need something exclusive	• Family entertainment parlors, food courts, gaming arcade, book store
Off Day	Round the year business	
Avg. Retail Rent (Small)	Average Rent Rs 555 PSF per month	Proposed rent = Rs 470 = \$9.50 PSF per month
Avg. Retail Rent (Large)	Average Rent Rs 390 PSF per month	
Avg. Office Rent (PSF per month)	Mumbai Rs 262, Delhi Rs 157, Bangalore Rs 55, Chennai Rs 55	Avg. Rent Rs 132 = \$2.60 + premium for high street \$0.70 = \$3.30 PSF per month

EXHIBIT 8 - This Exhibit Shows a Snapshot of the Analysis of 12 Top High Streets in The Country. This Information Provides Best Practices and Several Design & Operational Parameters for the Project.

tain the flow of customers toward various retailers. This concept is similar to the roadside hawkers one might find in many traditional Indian markets. Tenants might sell Indian finger food, handi-



EXHIBIT 9 - Neighborhood Lifestyle Center in Los Angeles

crafts, pottery, handloom, henna (Indian tattoo), and other traditional goods (see Exhibit 10).

Approximately 50 percent of the project land area will be dedicated to landscaped outdoor spaces with water features, green space, amphitheaters, and seating areas (see Exhibit 11). The facility will also include car parking in two-level basement garages with valet service. Several parking spots will be designated for the office staff and will



EXHIBIT 10 - Concept of Kiosk-Style Shops

be available for use by mall visitors in the evenings and on weekends.

The proposed solution has something to offer all the stakeholders – the customer, the retailer, the developer, and the investor. The Indian consumer will find a perfect balance between a mall and a bazaar, and will not have to struggle to change their shopping habits, which have roots in traditional open bazaars and fairs. The Western retailer will find real estate options commensurate with their brand image and requirements. The design, construction and organized infrastructure of these projects will be consistent with their sister stores in the rest of the world and will aid the owner in running efficient and profitable operations. The developer will have the first-mover advantage to build and operate a new breed of retail real estate assets in India. The mixed-use component will help to hedge the risk associated with the retail asset class. Class A office and retail space is in great demand in India. The investor will be able to take advantage of the booming Indian real estate market that promises significant returns on investment. The project contributes to an asset class whose demand is predicted to grow in the years to come, as a result of the exponential growth in retail as well as every other sector of the Indian economy. ■

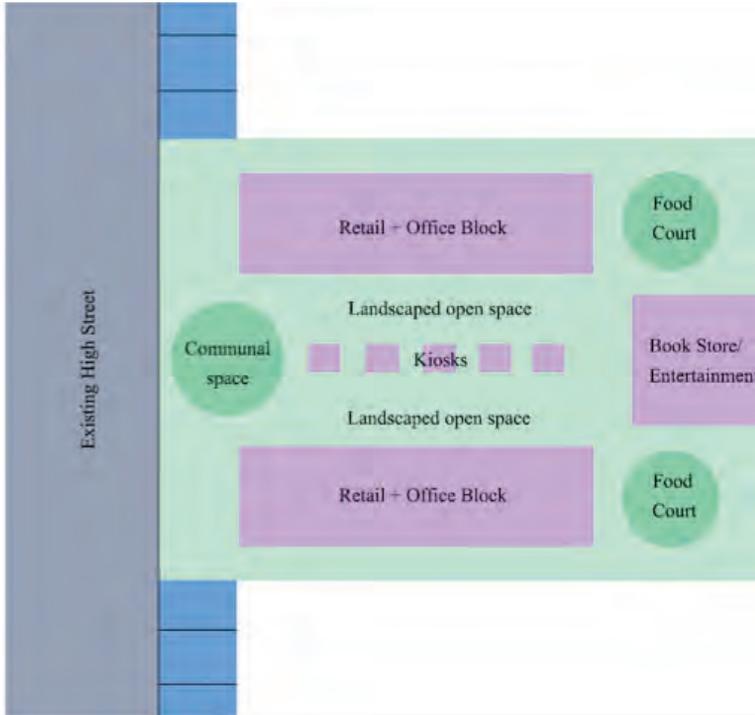


EXHIBIT 11 - Conceptual Site Plan for the Project, Not to Scale

ENDNOTES

1. <https://www.cia.gov/library/publications/the-world-factbook/geos/in.html>.
2. As per author’s conversation with Mr. Arvind Singhal, CEO of Technopak and based on a presentation given by him at the HBS India Conference on March 15, 2009.
3. “The India Retail Story,” *India Retail Report 2009* © IMAGES F&R Research, www.indiaretailforum.in.
4. India Brand Equity Foundation (IBEF), *India Retail: Market and Opportunities*, Annual Report 2008.
5. *Ibid.*
6. *Ibid.*

7. McKinsey & Company, “The Great Indian Bazaar, Organized Retail Comes of Age in India.” csi.mckinsey.com/~/.../THE_GREAT_INDIAN_BAZAAR_SECURE.ashx
8. Wikipedia - A souq is a commercial quarter or a market in an Arab or Muslim city. It may also refer to the weekly market in some smaller towns where neutrality from tribal conflicts would be declared to permit the exchange of surplus goods. In Modern Standard Arabic the term refers to markets in both the physical sense and the abstract economic sense.
9. “Luxury Brands a Tough Sell in Wealthier India,” December 25, 2008, <http://news.moneycentral.msn.com/provider/providerarticle.aspx?feed=OBR&date=20081225&id=9475131>.

Real Estate Course Offerings at Harvard

The following list of real estate courses is representative of the classes offered across the University. Harvard students are also welcome to cross-register for classes at MIT. A current list of courses can be found at: www.reai.harvard.edu/course-listings

FINANCE & DEAL STRUCTURING

Includes real estate finance, capital markets, and deal structuring

- GSD 5204.** Real Estate Development and Finance. R. Peiser (Fall)
- HBS 1684.** Real Property. A. Segel (Fall)
- HBS 1428.** Venture Capital & Private Equity. P. Gompers, M. Rhodes-Kropf (Fall)
- HBS 1440.** Private Equity Finance. D. Scharfstein (Fall)
- KSG HUT-265.** Real Estate Finance & Development Fundamentals. E. Marchant (Fall)
- KSG API-141.** Finance. A. Deep (Fall)
- FAS ECON 1745.** Corporate Finance. D. Larrain (Fall)
- GSD 5303.** Advanced RE Development & Finance. F. Apeseche & G. Mueller (Spring)
- GSD 5103/KSG HUT 268.** Public & Private Development. G. Kayden (Spring)
- GSD 7307.** Strategy, Sustainability, & Finance. J. Macomber (Spring)
- HBS 1415.** Real Estate Finance. N. Lietz (Spring)
- HBS 1462.** Real Estate in Emerging Markets. N. Retsinas (Spring)

PHYSICAL DESIGN & CONSTRUCTION

Includes site planning, design typologies/standards, construction management, and design lab

- GSD 5212.** Field Studies in Real Estate, Planning, & Urban Design. R. Peiser (Fall)
- GSD 7411.** Design & Development: from Concept to Implementation. S. Pollalis & A. Georgoulas (Fall)
- GSD 3329.** Methods of Urban Planning. J. Grant Long (Fall)
- GSD 5304.** Transportation Planning & Development. R. Dimino (Fall)
- GSD 6120M1.** Techniques of Physical Planning I. (Fall)
- GSD 6323.** Brownfields Practicum: Regeneration & Reuse of Brownfield Lands. (Fall)
- GSD 7407.** Managing the Design Project. R. Jennings (Fall)
- GSD 5302/KSG HUT 251.** Transportation Policy & Planning. J. Gomez-Ibanez (Spring)
- GSD 5475.** The Design of Housing in the United States. L. Cott (Spring)
- GSD 5484/KSG HUT 208.** Redevelopment Policy. S. Fainstein (Spring)
- GSD 7222.** The Bilbao Guggenheim Museum: Topics in Project Management. S. Pollalis (Spring)
- GSD 7409/HBS 1465.** Real Estate Development, Design, & Construction. J. Macomber, E. Kohn, & C. Gordon (Spring)
- GSD 7413.** Integrated Project Delivery. R. Jennings (Spring)

URBAN ANALYSIS

Includes land use/planning, housing, law, transactions, approvals, and negotiation

- GSD 5201.** Urban Politics, Planning & Development. A. Altshuler (Fall)
GSD 5203A / B/KSG API 105. Markets & Market Failure. J. Kalt, J. Gomez-Ibanez (Fall)
GSD 5206/KSG HUT 263. Planning and Environmental Law. B. Blaesser (Fall)
GSD 5476. Housing Delivery Systems in the United States. J. Stockard (Fall)
KSG HUT 150Y. Housing, Urban Economic Development, & Transportation. M. Ruggie (Year)
KSG HUT 206. Disaster Recovery Management & Urban Development. D. Ahlers (Fall)
KSG HUT 209. Histories & Theories of Urban Planning Interventions. S. Fainstein (Fall)
LAW 43500A. Local Government Law. D. Barron (Fall)
GSD 5402. Public Approvals for Private Development Projects. M. Kiefer (Spring)
GSD 5403M3: Building Design Typologies & Operational Principles of Real Estate. B. Wang (Spring)
GSD 5473/KSG HUT 264. Housing Policy in the United States: The Intersection of the Public & Private Sectors. E. Belsky (Spring)
GSD 5486. There Goes the Neighborhood: Perceptions & Realities of Neighborhoods & Neighborhood Change. T. Griffin & J. Stockard (Spring)
GSD 5490/KSG HUT 266. Affordable Housing & Mixed-Income Housing Development, Finance, & Management. E. Marchant (Spring)
LAW 45680A. Real Estate Law. J. Mechanic (Spring)