GREEN LUXURY STUDENT HOUSING:
A REAL ESTATE FEASIBILITY STUDY

by

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B.S., International Business, 2001
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Submitted to the Department of Architecture in Partial Fulfillment of the Requirements for the Degree of

Master of Science in Real Estate Development

at the

Massachusetts Institute of Technology

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ABSTRACT

The primary purpose of this thesis is to estimate the demand for student housing that focuses on upperclass undergraduate and graduate students who typically shy away from dormitory housing. The initial chapters provide a brief introduction to conventional student housing, explain why the market is growing, review the growing sustainability trend and introduce the idea of green luxury student housing. Chicago serves as the test market where more than forty universities currently operate. Methods for financing, demand drivers, and overall feasibility are discussed for relevance to the market. Two examples of recently built student housing projects in Chicago and Boston are reviewed for current trends and components to their success.

Research conducted includes interviews with student housing developers, a student housing consultant, academic staff and other project participants. Site visits, available online data and reviews of project documentation supplement this research.

The thesis concludes with the expected demand believed to support the newly defined market niche and its potential feasibility.

Thesis Supervisor: John F. Kennedy
Title: Lecturer, Center for Real Estate

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Cristian Galli – Taurus Investments, Chicago

Jason Taylor – The Scion Group LLC

Thomas George – Wilmorite, Inc.

Jeff Turner – Brailsford & Dunlavey

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INTRODUCTION

"Student housing has emerged as an institutional investment category within the past few years, coinciding with growing college enrollment and an increasingly constrained supply of housing options for students. Demand growth, spurred by demographic and college attendance trends, has been robust since the late-1990s, at the same time that new dormitory capacity has been limited by strained university budgets."[1]

Coupled with the growing market for student housing, a new wave of thinking is changing the way buildings are renovated and built. Although the general idea of sustainability has been known for centuries, green or sustainable development has only recently approached a tipping point. Now after receiving the endorsement of the scientific community and the general population, potential real-time evidence of global warming has spurred interest into the real estate industry. Buildings are responsible for 39% of overall energy use, 70% of electrical consumption, and 30% of greenhouse gases.[2] Environmentally focused organizations such as Leadership in Energy and Environmental Design (LEED) and American College and University Presidents Climate Commitment have led the charge to shake-up the real estate development industry in order to transform its members into stewards of the planet.

Objective

The purpose of this thesis is to look into the growing market niche of student housing and how this subset of residential development will benefit from the growing trend in sustainable development. Specifically, to estimate the demand and test feasibility for luxury housing that is able to operate in the private market and can compete against public, subsidized projects. Chicago serves as the test market where more than forty

[1] RREEF Research: Prospects for Student Housing Investment, April 2007, 1.

[2] Buildings and the Environment: A Statistical Summary, US EPA

universities currently operate. Methods for financing, demand drivers, and overall feasibility are discussed for relevance to the market. Two examples of recently built student housing projects in Chicago and Boston are reviewed for current trends and components to their success.

Methodology

Research conducted includes interviews with student housing developers, two student housing consultants, one of whom is based in Chicago, academic staff and other project participants. Site visits, available online data and reviews of project documentation supplement this research. The thesis concludes with the expected demand based on students who don't receive financial aid, which is believed to support the newly defined market niche for green luxury, student housing.

CHAPTER ONE: WHY STUDENT HOUSING

Definition

Off-campus Student Housing for the purpose of this thesis refers to the product type that caters solely to full-time undergraduate and graduate students. Unlike a conventional renter, the monthly rent is typically all inclusive, with units coming furnished and including all utilities.[3] The properties typically include a high degree of amenities and are more management intensive than conventional apartments. Resident Advisors or RA's will often reside on-site in order to more carefully manage the student experience.[4] Student housing projects can be on campus or off-site, but almost always are within close proximity either by walking or by shuttle bus. One of the primary differences between university run student housing and private student housing is the requirement of a university sponsored meal plan.

Though theoretically open to students in any year of matriculation, in practice, most residents of private student housing are upperclassman - Freshman typically are required to live in university-owned dormitories on campus, while seniors and especially graduate students will opt for a less structured environment.[5] Off-campus housing in weaker markets may be more flexible in allowing non-students to lease rooms they cannot otherwise fill.[6]

Layout

Units are typically setup as two to six bedroom apartments, with a higher proportion of four bedroom units. Rent for the modern crop of off-campus housing is charged

[3] RREEF Research: Prospects for Student Housing Investment, April 2007, 2.
[4] *IBID*
[5] *IBID*
[6] *IBID*

typically by the bed since students will only being leasing their bedroom.[7] Rent includes furniture, all utilities and Internet with access to a common area room with kitchenette. Leases are usually signed for twelve months (50 weeks), moving away from the nine month school year which would result in thee months of vacancy.

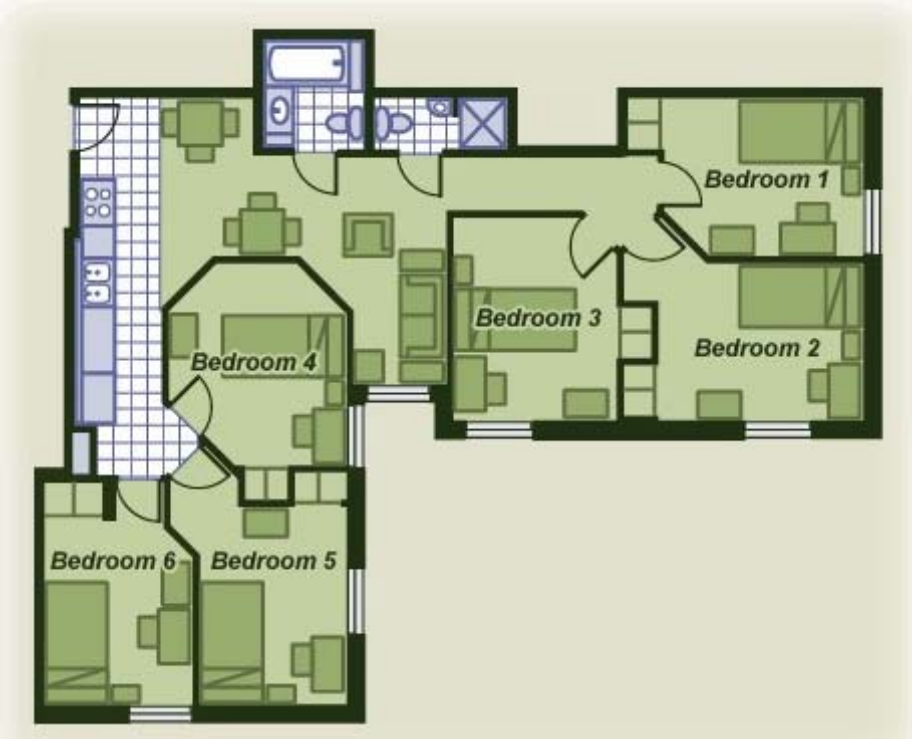

Figure 1: Six Room Student Floor Plan[8]

As shown in the above floor plan, each bedroom ranges between 100 and 150 square feet. Rooms are single occupancy, increasing privacy to each student. There are numerous variations on this model where the community space is larger and may contain additional restroom facilities.

[7] Interview: Alan Parkin, Centerline Capital (Formerly at JPI), 6/20/2007.

[8] http://www.flemingc.on.ca/StudentInfo/FrostRes/Suite.asp, Accessed on 7/11/07.

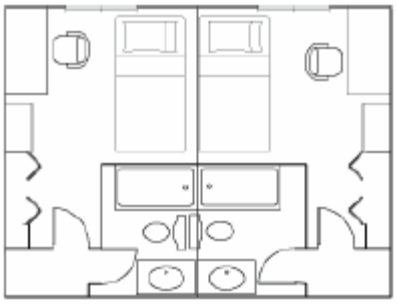

Figure 2: Single Student Floor Plan[9]

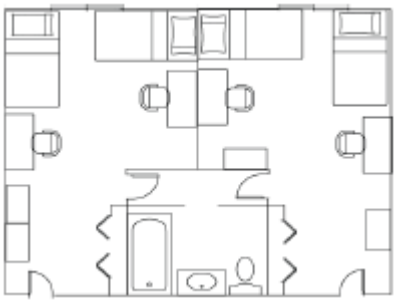

Figure 3: Double Student Floor Plan[10]

Figures 3 and 4 exemplify single and double room occupancy. Depending on the University, single occupied rooms may have bathroom facilities included in each unit, effectively becoming complete studios, but most undergraduate dormitories will use shared facilities and a common room kitchenette. In the example of Figure 3, the bathroom facilities are shared between the double rooms. Layouts vary widely and often depend on the age of the housing or what is accepted in a market.

Rise of the Echo Boomers

The National Multi-Housing Council (NMHC) reports that Student Housing is becoming one of the apartment industries most important niche opportunities. The 75 million strong Echo generation, born between 1976 and 1994, has been hitting college age

[9] http://housing.depaul.edu/lincolnpark/halls/Munroe_new.asp, Accessed on 7/13/07.

[10] *IBID*

since 1994 and has pushed up university enrollment, which is generally on the rise across the nation.[11]

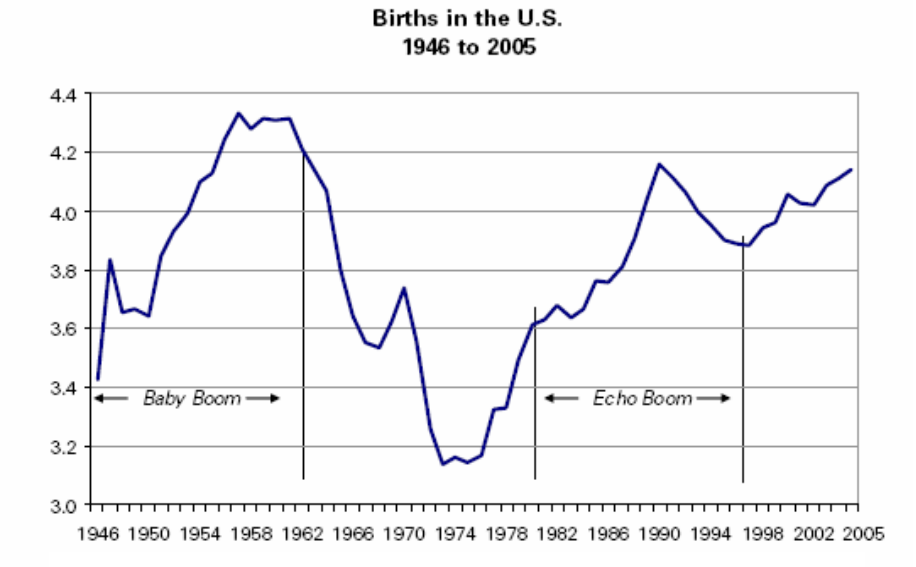

Figure 4: National Center for Health Statistics, RREEF

The oldest of these Echo Boomers are now finishing college, so the surge will continue for at least another decade with an average of over 4.2 million children turning 18 each year.[12] Proof of this trend is clearly evident between 1970 and 2004 where the enrollment rate increased among those ages 18–34, while individuals enrolled in postsecondary education increased from 48 to 64 percent.[13] Most universities have not been able to keep up with the growth in attendance and instead have pushed a greater number of students off campus.

Less discussed is the rise in graduate student enrollment. As the Echo student boom ages, many of these same students will also enter graduate school, a demographic that is not well covered or reported. Many universities do not supply on-campus graduate

[11] Multi-Housing News, Studying a Multi-Housing Niche May 2007, 38.
[12] RREEF Research: Prospects for Student Housing Investment, April 2007, 3.
[13] Institute of Educational Sciences (IES): The Condition of Education 2006

housing and when available, the amount of housing is usually less than their undergraduate classmates.

Housing Supply

With many universities relenting to the pressures to keep housing on par up with enrollment, these institutions increasingly require only Freshman to stay on campus. RREEF Research estimates that dorm capacity at four-year public colleges has fallen from 32.2% of undergraduates in 1990 to 24.8% in 2004.[14] Reasons for the lack of student housing include:

- Declining funding capacity and subsidies from state governments, which increasingly favor primary over secondary education, as well as shifting investment priorities in private schools toward academic buildings over dorms.[15]

- Rising recognition that the private sector can more efficiently address the student housing needs shortfall. California, Texas, and Florida enroll the greatest number of undergraduate students, yet none houses more than 20% of their undergraduates in dorms and affiliated housing, creating more opportunities for private student housing providers.[16]

Expansion of dorm capacity across the nation has been an issue, especially for universities that lack the financial backing. Of the top fifteen states by enrollment, an average of 24% of the undergraduate student population is housed on campus.[17]

[14] RREEF Research: Prospects for Student Housing Investment, April 2007, 6.
[15] *IBID*
[16] *IBID*
[17] *IBID*

Dorm Capacity at Public Four-Year Schools
Top 15 States by Enrollment (000s), 2004

State	Undergraduate Enrollment	Dorm Capacity	Capacity as Share of UG Enrollment	Capacity Shortfall
California	480.5	92.7	19%	387.8
Texas	391.7	77.9	20%	313.8
Florida	310.7	36.8	12%	273.8
New York	287.0	77.9	27%	209.1
Michigan	221.5	70.2	32%	151.3
Ohio	217.2	54.2	25%	163.0
Pennsylvania	211.3	70.5	33%	140.8
Indiana	163.3	38.7	24%	124.6
Georgia	160.6	36.2	23%	124.5
North Carolina	150.0	50.5	34%	99.6
Illinois	149.4	45.3	30%	104.0
Virginia	140.4	54.2	39%	86.2
Louisiana	131.8	26.5	20%	105.4
Wisconsin	128.1	35.9	28%	92.3
Colorado	124.2	25.3	20%	98.9
Total	**3,267.7**	**792.8**	**24%**	**2475.1**

Figure 5: National Center for Education Statistics, RREEF Research

In addition to a lack of student housing, much of the existing facilities are becoming obsolete since they lack central air conditioning, fitness facilities, meeting rooms and high-speed wireless Internet.[18] A 2004 National Multi Housing Council (NMHC) survey of 1,500 off-campus properties in 64 college towns across the nation determined that most of the properties were at least 20 to 30 years old.

Investing in Student Housing

Presently, there is an unprecedented amount of money following the real estate market. Low interest rates and loose lender terms have helped compress cap rates to a point where bond rates start to equal many of the returns that traditional real estate

[18] *IBID*, 7-8.

investments yield. With the flood of money coming from institutional and the individual investors, most participants are left with no choice but to turn to markets that were previously overlooked in search of better returns - enter student housing. To further examine the investment feasibility of student housing, the following list remunerates the major points:

Positives

1. "Demographic trends support increasing demand, in terms of both the magnitude of population growth and matriculation rates, such that the student population is rising twice as fast as the total U.S. population." [19]

2. "Attendance is growing most quickly among the types of students more likely to seek institutional-quality student housing: female, full-time (as opposed to part-time) students, attending four-year (as opposed to two-year), and public (as opposed to private) colleges."[20]

3. "University-owned supply has failed to keep pace with demand growth, leaving a large and growing supply gap, as the private sector has been slow to fill the void. Moreover, much of the existing student housing stock is old and obsolete, and does not meet evolving industry standards or satisfy student preferences in terms of unit design and project amenities. Thus, the effective gap between the units preferred and those actually supplied is magnified."[21]

4. "Per-unit rents for student housing generally exceed those for conventional apartments, as units have more tenants paying rent. Recent rent growth also has been greater. Rents and occupancy tend to be less sensitive to economic cycles than conventional apartments – falling less in lean years, and rising less during economic expansions."[22]

5. "Credit-loss at student complexes typically is below that of conventional apartments because leases usually require parental guarantees, yet this product

[19] *IBID, 1.*
[20] *IBID*
[21] *IBID*
[22] *IBID*

typically commands yields 75 basis points higher than for conventional apartments. Student housing also commands higher prices per square foot."[23]

6. "Despite a growing institutional presence, the student housing market is still highly fragmented and dominated by small, undercapitalized owners, whose market share would be vulnerable to capture by larger, more professional institutional developers, managers, investors, and owners."[24]

7. Information – since the student housing market has only recently had a few institutional players enter the market, information is imperfect and delayed. In an industry that has been revolutionized by Internet based databases and real time on-line data, student housing may offer opportunities for those who can exploit the opportunity

Negatives

1. Turnover – often close to 66% of all units, all of which occurs within a short period of time[25]

2. Convertible – if the building was to be converted to condos or conventional apartments, the layouts are not ideal, which increases the cost to convert and may decrease the potential for a new use[26]

3. Leasing – the focus of the lease-up all occurs right before the school years starts. If marketing and leasing are ineffective, the owner could get stuck with an underperforming asset for a year[27]

4. Word of mouth – college students are swayed by the reputation a property develops, this can in turn hurt leasing until management or marketing is able to sway potential renters back in favor[28]

[23] *IBID*
[24] *IBID*
[25] *IBID,* 18-19.
[26] *IBID*
[27] *IBID*
[28] *IBID*

5. Amenities – the property must be constantly upgraded to keep up with the latest in technology including Internet access (i.e. Wi-fi) and also be watchful of what services student consider a must have[29]

6. Furnishing – typical student housing comes with furniture which must be replaced every five plus years. The capital costs to maintain the units are usually higher than a conventional apartment due to earlier than required replacements of the carpet, doors, etc.[30]

7. On-Campus housing – if the university decides to build additional units on campus, this will directly compete with the project since proximity to class is one of the biggest draws of students to housing[31]

8. Management intensive – depending on the size of the project, resident advisors are kept on-site in addition to conventional property managers. Most students are experiencing living on their own for the first time, thus owners must ensure additional manpower is available at the properties to ensure the asset is adequately maintained. [32]

9. Per-Bed leasing – The partnering of students into the same unit requires a matching service. Filling units with compatible roommates can be difficult, even when overall project demand is high[33]

Despite the drawbacks, it's clear why student housing is poised for exponential growth. Universities lack resources, housing is expensive to build and student enrollment continues to increase. However, the key depends on the developers and their ability to pull together resources and create the necessary relationships with the universities in order to be successful. Despite what appears to be a certain market opportunity, attention should also be paid to the rising cost of tuition and how that will affect enrollment.

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[29] *IBID*
[30] *IBID*
[31] *IBID*
[32] *IBID*
[33] *IBID*

CHAPTER TWO: SUSTAINABILITY

Sustainable development is not is a shift in conventional thinking on how to build, market and operate properties. The cost to operate properties can permanently be decreased Long term effects will decrease operating expenses while preserving natural resources, since the cost to implement many of the technologies and designs are becoming standard. Instead of reiterating the array of savings green development can provide, the following Chapter will briefly define what is green discuss the sustainable trends and how they relate to the student housing industry, and then list the most reliable technologies that would benefit student housing.

Defining Green

There are numerous definitions of what green development could mean, but for the purpose of this thesis, green or sustainable development will closely follow GlobalGreen.com's description. "Green buildings are resource efficient buildings that utilize construction materials wisely to decrease the overall ecological footprint of the building."[34] Every construction project has some impact on the land and its surrounding environment. The case for building green is to do prevent avoidable waste, reduce maintenance costs, increase the life span of a building and positively impacts its occupants.

The Sustainable Trend

University housing stands to benefit greatly from cost reductions that green development offers. Besides reducing maintenance costs, green construction also serves as a catalyst to teach students the principles of conservation. The environments

[34] http://www.globalgreen.org/gbrc/whatmakesgreen.htm, Accessed on 7/14/07.

created around green design enhance the academic experience and increase the social interaction of the students.[35] Tufts University in Medford, MA exemplifies the movement by following a set of guidelines each of their new buildings will incorporate:[36]

- Careful site selection to minimize impacts on the surrounding environment and increase alternative transportation options
- Energy conservation to ensure efficient use of natural resources and reduced utility bills
- Water conservation to ensure maximum efficiency and reduced utility bills
- Responsible storm water management to limit disruption of natural watershed functions and reduce the environmental impacts of storm water runoff
- Waste reduction, recycling, and use of "green" building materials
- Improved indoor air quality through the use of low volatile organic compound products and careful ventilation practices during construction and renovation.
- Reduced urban heat island effect to avoid altering the surrounding air temperatures relative to nearby rural and natural areas

“Green building is as much about design strategy as about selecting green materials. Integrated design – thinking about how a building works as a system and designing that system to be environmentally-friendly – is a key part of green building.”[37]

With Universities nationwide agreeing to reduce their carbon footprint and to embrace environmental construction, most new facilities will be designed and built under a new convention. In order to make the transition, the following technologies are listed as a starting point for inclusion in student housing renovation or ground-up development.

[35] http://www.tufts.edu/tie/SGH/LEED.htm, Accessed on 7/18/07
[36] http://www.epa.gov/greeningepa/projects/, Accessed on 7/8/07
[37] http://www.globalgreen.org/gbrc/whatmakesgreen.htm, Accessed 7/14/07

SustainableTechnology

Solar Hot Water

Solar panels or tubes that collect the suns energy to heat water serve as one of the primary technologies in reducing electrical bills and carbon production. As one of the most efficient technologies, solar produced hot water directly affects one of the largest uses- residential properties.

Photovoltaic (PVs)

Despite the cost and efficiency hurdles associated with PVs, a large amount of federal and state subsidies help propel this technology as a real option for energy reduction. Best of all, since there are no moving parts, and nominal annual maintenance, PVs are one of the few energy sources that are carbon neutral. PVs also directly combat one of the largest expenses a building owner and user faces- electrical usage.

Building integrated PVs are not as efficient as standard, roof mounted PVs, but their growth in popularity will ensure that the technology will continue to be refined. In addition to electrical generation, integrated PVs also serve as a new way to design the skin of a building.

Figure 6: Large Photovoltaic Array

Wind

Wind electrical production is most recognized by the giant white wind mills that slowly turn with the prevailing winds. A new form of wind based technology from Aerotecture International, Inc. has created a product that is not only efficient, but also is no longer required to be vertical, and isn't prone to bird loss or a victim of unsightly aesthetics. Although not yet in mass production the adoption and refinement of this technology will push for the acceptance of wind generation in urban areas.

Figure 7: Aerotecture International's 520H Wind Turbine

Rainwater/Greywater

Rainwater harvesting and greywater recycling provides a unique opportunity to dramatically reduce usage. The harvested rainwater collected off the building rooftops can be stored in cisterns for reuse as building toilet water and open space irrigation. The cost of water and storm fees will most influence this technologies feasibility.

Heating/Cooling Reductions

Geothermal wells will utilize the natural heat and cooling of the subsurface to efficiently reduce large energy demands throughout most of the site. Due to the minimal maintenance, payback periods will shorten as utility rates increase over time. However, this technology becomes less feasible as the size of the property decreases or when an existing structure is renovated.

Vegetated Roof

Extremely popular for aid in the reduction of a sites' heat island effect, vegetated roofs help to extend the life of roofing systems but don't always offer the best payback. Vegetated roofs help to reduce storm runoff and have the most incentives for inclusion in the city of Chicago, IL.

Sustainable Construction

Transit Oriented Development

American Public Transit Association (APTA) states public rail transit increases community well-being by creating jobs, boosting economic development and property values, and by reducing pollution and traffic congestion. A report from the APTA further states that each person riding light-rail transit vs. driving an automobile for one year reduces hydrocarbon emission by nine pounds, nitrogen oxide emissions by five pounds, and carbon monoxide emissions by 62.5 pounds. One electric light-rail train produces nearly 99 percent less carbon monoxide and hydrocarbon emissions per mile than one automobile does. Student housing located near transit and the university reduces the need for parking spaces and supports pedestrian friendly community, which in turn puts less stress on the environment.

Sun Orientation

Analysis of solar access and shadows help determine the massing and location of buildings on a site to best take advantage of natural light. Sun oriented building design not only incorporates solar access for natural day lighting, but also passive solar space heating, rooftop solar water heating, and photovoltaic electricity production.

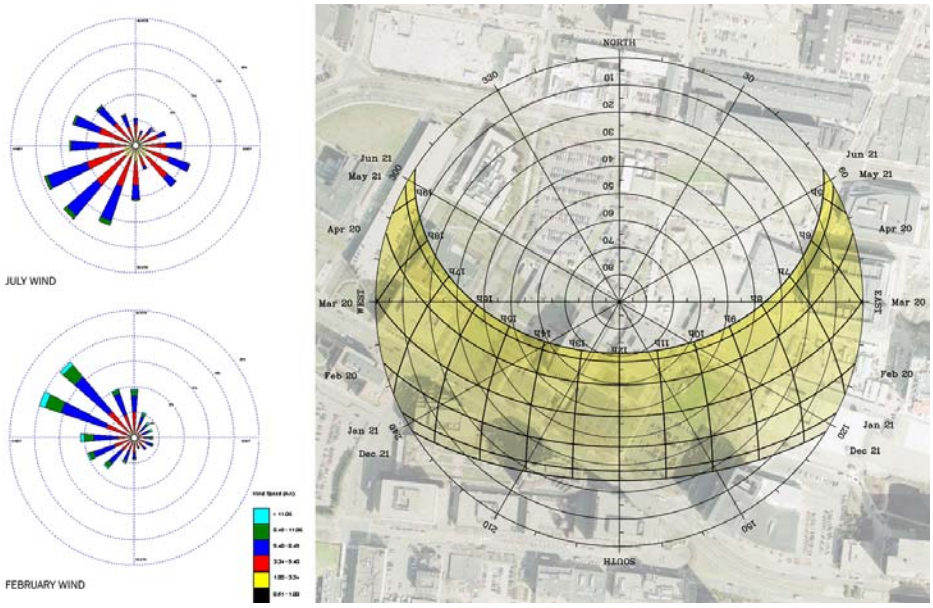

Figure 8: Path of Sunlight, Trevo Development Proposal 2007

Modular Construction

Reducing construction costs while ensuring quality has always been an elusive goal until the recent strides in modular construction. By constructing the major components of a building in a factory, quality of workmanship is increased, construction time is lowered, and cost is lowered.[38] Although early adaptors have started to accept modular construction as the inevitable shift in real estate construction, presently modular construction works best for student housing and hotels due to the many similar sized modules. The maximum size of each modular component is limited to the size of the truck transporting each piece.

[38] Cameron, Pete, and Nadia DiCarlo. "Piecing Together Modular: Understanding the Benefits and Limitations of Modular Method for Multifamily Development." Thesis, MIT, 2007.

Figure 9: Prefabrication at Warehouse

Figure 10: Stacked Modular Units

Figure 9 and 10 above reveal how modular construction goes from warehouse to on-site construction.[39][40] Upon completion of the fabrication in the warehouse, a project can be completely built on-site within a day, dramatically reducing site impacts.

[39] http://newprojects.bre.co.uk/condiv/cpm/portal/guides/Apartments%20flyer%20V4a.htm, Accessed on 7-19-07

[40] http://www.nahbmonday.com/consumer/editor_images/modular_construction0306.jpg, Accessed on 7-19-07

CHAPTER THREE: THE IDEA – GREEN LUXURY STUDENT HOUSING

Few developers focus on purpose built housing for students who demand a higher quality of housing. Competition for the large scale, 400+ bed, amenity rich properties that now are starting to surround the nation's major universities are great for hordes of students who enjoy the dormitory environment, but not all students prefer to live in this format. This thesis will attempt to flush out a student demographic that values housing similar to the quality of their parents. 84% of students coming into colleges had their own bedrooms at home and 40% had their own bathrooms.[41] Green luxury student housing directly addresses the top two requests from students – privacy and a "home like environment."[42] Green Luxury Student Housing targets upperclass undergraduate and graduate students who value a more home like environment while not giving up the amenities of a modern luxury dormitory, but differ from the conventional luxury apartment building.

Desire to move off campus

Dennis Corkery, a 2007 graduate from the University of Chicago, explains the typical scenario. A student lives on campus for the first few years, enjoying the close interaction with other students who are there for the first time, living outside their home, without the watchful eye of their parents. However, the attraction of this experience eventually fades and increasingly, students begin the search to live off campus. Dennis followed the same trend, living on campus for the first two years before relocating off-site. Dennis explained that there were two primary motivations to move off campus: lack of housing and the expense of housing. Most on-campus dormitories that contain dining halls require the students to pay for a meal plan. When Dennis lived on campus

[41] Dan Howard, Managing Director at Fisher Friedman Associates (Sonoma State University News Release, 8/18/03)
[42] Andrew Pitts, Treanor Architects, P.A., Student Housing Today…1.

freshman year (2003), he spent $6,300 with a meal plan for 9 months. Living off campus in a similar quality unit cost $6,000 for 12 months.

A new trend towards off-campus living also stems from increased expectations of the students and parents. "Partly because higher education costs so much, families and students are demanding more of it," said Bronstein of the Scion Group. "They are looking for more of an experience." This translates to housing that supports student life by fostering social interaction. When the quality of the on-campus housing decreases substantially below market rate housing, the value of living on-campus erodes. Realizing that most students will eventually relocate off-campus due to the limited availability of on campus housing or the desirability of newer off- campus properties, the next task is to define the target market.

Luxury Housing

The term luxury can have many connotations, but for the purpose of this thesis, luxury housing is new construction, apartment style layouts and upgraded interior and exterior finishes. Amenities for luxury housing property are typically superior in quality and are more numerous than surrounding competing properties. In the case for luxury student housing, luxury amenities may include wireless capability, high speed wired internet, and a location in close proximity to a university.

Target Market

Most universities attempt to provide on-campus housing for most of their freshman and often a large majority of sophomores. However, the restrictions ease considerably when looking at undergraduate upperclassman and graduate students. Since each have distinctive tastes and requirements for housing, the two groups are outlined for comparison:

Upperclass Undergraduates: Juniors & Seniors

- Highly value proximity to campus
- Privacy via suite layout: separate study/living and sleeping areas[43]
- Sleeping room doesn't need to be generously sized[44]
- Private bath facilities[45]
- Technology – data connections, wireless Internet, cable hookups
- Access to housing keeping services and storage
- More likely to live with classmates
- Parents pay most/all of students expense
- Value in-unit washer/dryer
- Prefer that off-campus housing doesn't maintain on-campus rules & regulations[46]
- Off-Campus move seen as rite-of-passage[47]

Undergraduates are the primary target when student housing developers seek out opportunities for new developments since they are more readily predictable and can be housed more densely. Undergraduate enrollment is also expected to expand more than graduate students, thus requiring the largest amount of housing and creating a bigger target market.

Graduate Students

- Often commute to school
- May have a job while attending school
- A greater proportion of these students will be married or living with a significant other
- Only 11% of students have access to on-campus housing[48]

- Financial aid is significantly lower than undergraduate
- More likely not to share a room with another student[49]
- Prefer to have some flexibility in choosing their own furniture style and organization[50]
- Typically have an increased buying capacity despite lack of parental support[51]
- For single students, several users often share one apartment
- For married students, the criteria is more complex than for single graduate students, at MIT, nearly 50% are married and 25% have children[52]
- The age range can be much wider depending on the University
- Graduate students have a higher value on privacy and have been found to study longer periods of time.[53]

Overall, an estimated 16,775,000 college and graduate students are in the United States.[54] Identifying graduate students for the target market is not as clear as with their undergraduate classmates. Graduate housing has historically been much lower in comparison to undergraduate housing due in part to the heterogeneous characteristics of the population. Developers are less likely to chance a development on graduate students since their housing preferences are less predictable.

Financial Aid

Students need for financial aid offers a simple way to qualify the target market to identify those students who may have a higher threshold for spending on housing. The logic

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[43] *IBID*
[44] *IBID*
[45] *IBID*
[46] *IBID*
[47] *IBID*
[48] Han, Jienan. "House, Home, and Community: Good Models for Graduate Student Housing." Thesis, MIT, 2004. 37-38.
[49] *IBID*
[50] *IBID*
[51] *IBID*
[52] *IBID,* 79.
[53] Han, Jienan. "House, Home, and Community: Good Models for Graduate Student Housing." Thesis, MIT, 2004. 80.
[54] US Census Bureau, American Community Survey Profile 2002

behind this statement centers on students ability to pay the above market rents associated with luxury accommodations. Although this serves as a generic approach to qualify the target market, focusing on student's financial strength offers a quick, rough estimate.

Not all financial aid is equal. With tuition for public and private institutions rising nationally 11% and 6% respectively for the 2004/2005 school years[55], financial aid depends on the makeup of the university. Students who attend private universities where tuition can be many times public colleges are thus more likely to apply for loans. In 2002, 42% of public university students received student loans while 63% at private, four year universities obtained student financing.[56] Consideration should be given to each university since the rate of financial aid can vary widely. Incorrectly counting students who receive financial aid may misstate the target market. Nationally, financial aid is given to 11.2 million students annually, reducing the nationwide potential target market to roughly 5.5 million students.[57] Although many students use financial aid to help pay for off-campus housing, this thesis focuses on only those students who don't require loans since this is interpreted as an indicator for affluence in this thesis.

Layout/Location

Since undergraduate and especially graduate students seek more private, conventional apartment like housing, the layout dictated by green luxury housing should follow a similar theme. Ideally, the property would not be as big as the larger housing where 400 or more beds are built at one time. The green luxury dorms should be 50 or less units which is based on a smaller target market that caters to more affluent students.[58] Determining the appropriate mix of upperclass undergraduate and graduate students

[55] NCES. Changes in Patterns of Prices and Financial Aid, 11/05, 1.
[56] *IBID* ,15, 25.
[57] US Census Bureau News, 8/24/06, 1. (Data was taken from Financing the Future: 2001 to 2002)
[58] Alan Parkin – recommend 50 or less units sine the target market would be smaller than the overall student population.

may pose difficulties since each group has different social and living habits. Additional research should determine if the two groups should be separated as exemplified at most major universities.

A likely scenario is to separate the two groups altogether, focusing on shared living with single rooms for undergraduates while graduate students will receive a more apartment like layout. University Center owned by DePaul University in Chicago, IL located in their Loop Campus, houses both undergraduate and graduate students in the same building but are segregated by floor.[59] Separation of the two groups may not be vital, but appears to yield higher occupancy better returns since the renting characteristics differ.

Upon asking Alan Parkin of Centerline Capital his thoughts, he noted a student oriented acquisition that was luxury and apartment style, serving UCLA in California. The project was clearly not a dormitory however Alan cautioned that these projects would do best around a private university or top tier school where the demographics are likely to be more affluent due to the higher cost of education.

The following illustration paints a visual of what a typical student wants versus what students get for most accommodations.[60]

[59] http://www.universitycenter.com/building/index.html, Accessed on 7/24/05.
[60] Andrew Pitts, Treanor Architects, P.A., Student Housing Today…2.

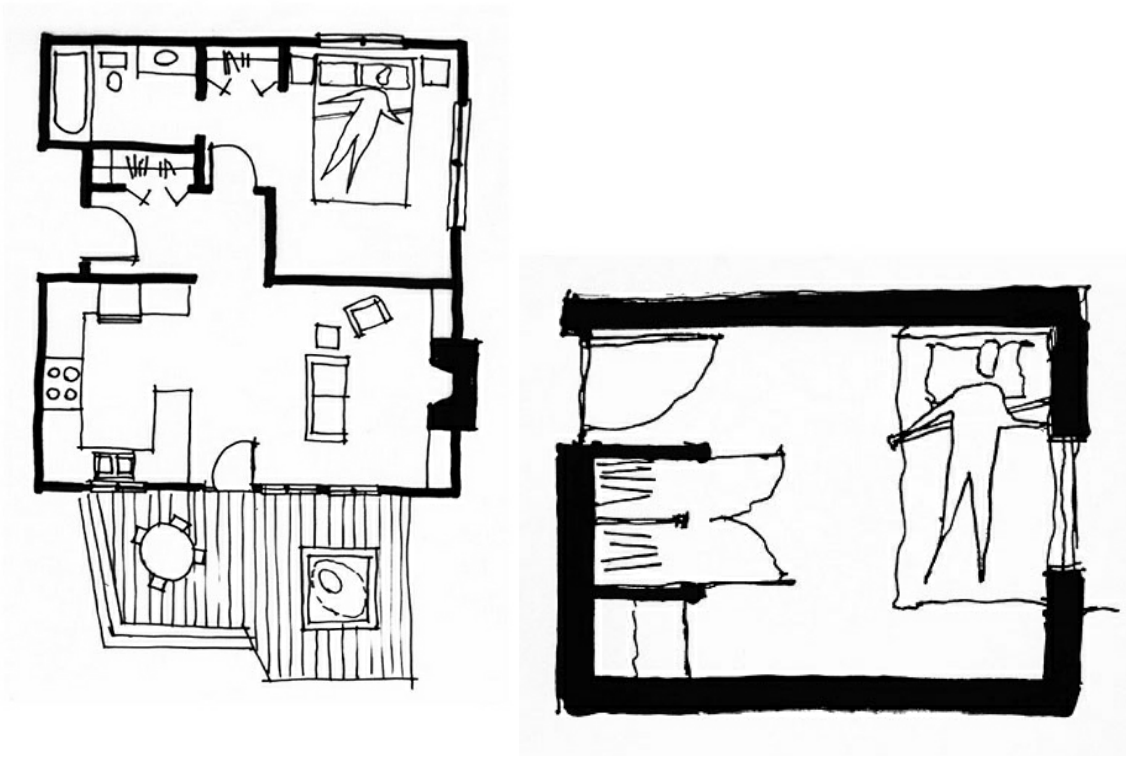

Figure 11: Student Ideas of Housing vs. Reality

Essential amenities include high speed internet, upgraded finishes, study areas, storage space with a possible inclusion of a flat panel television and all the modern conveniences.[61]

The most popular format to provide a sense of privacy is a suite layout – a separate study/living and sleeping area.[62] These suite layouts can vary from one up to four students. The study/living areas provide a "home like" living room.[63] A students desire to have more privacy usually incorporates having their own bathroom. The best positioned property tends to have a combination of shared and private bathrooms in order to appeal to the broadest range of students. Determining what part of the

[61] *IBID*
[62] *IBID*
[63] *IBID*

population will come from undergraduate vs. graduate students is an important part to finagling a layout since each group values floor layouts differently.

Demand Formula

To measure the demand for the luxury component of student housing, the following approach has been adopted:[64]

1. Determine percentage of full-time students
2. Determine number of units on campus
3. Determine number of students that must find housing off campus
4. Calculate number of students who receive financial aid
5. The remaining students who do not receive financial aid and who live off campus are the target market

A few assumptions have been made to simplify the demand calculation. The number of students living off-campus is fairly accurate and can be calculated for any university, however the assumption of financial aid as an indicator for the target market is less accurate. Accepting financial aid doesn't necessarily exempt a student from living in a luxury apartment, but does indicate a demographic that is less likely to spend a premium on housing. Additional research would help flush out the potential demand for students who are willing to pay for luxury accommodations.

[64] Alan Parkin recommended financial aid be used as way to quantify an upscale target market

Competition

Mid-size developers such as Capstone, Century and JPI have succeeded in building off-campus housing for more than a decade. The student housing industry has only recently been invaded by larger, institutional backed companies such as Trammell Crow and LaSalle Partners. To date only three REITs operate solely on student housing.

- American Campus Communities (ACC) was the first public student housing REIT going live in 2004. The company owns or manages 42 properties with 26,000 beds.

- GMH Communities Trust (GCT) started operations in 2005 and owns military housing in addition to student housing. The company currently manages 77 properties and 47,000 beds.

- Education Realty Trust (EDR) completed their IPO in 2005. The company presently manages or owns 66 properties with 40,000 beds. The company was formerly named Allen & O'Hara.

Despite the entrance of publicly filing companies, which carry stringent disclosure regulations, competition among student housing developers remains fragmented. Most units are owned by small investors and are not professionally managed.[65]

In addition to competition from developers, there is also competition in the form of building types. Purpose built student luxury housing will compete with on-campus housing, conventional luxury apartments and traditional off-campus housing which consists of condos or houses. The most likely competitors will be existing new student housing and luxury apartment buildings.

[65] RREEF Research: Prospects for Student Housing Investment, April 2007, 8.

Differentiation

Student housing has distinct layout configurations that differ from conventional apartment buildings. Student housing has more occupants per square foot, typically offers communal kitchen and restroom facilities and operate a more intensive program in terms of management, security and maintenance. The introduction of green luxury student housing begins to blur the distinction between standard student housing and conventional apartments. However, the two groups are distinctly different. The following points out some of the more notable differences regarding student housing:[66]

- Utility and technology costs are built into the rent structure
- Increased security needs
- Academic and annual contract term options
- Lease directly with each occupant vs. "joint & several" in conventional apartments
- Design of common-area amenities geared towards student population
- Proximity to campus

Depending on the local ordinance, conventional apartments may allow disallow students from renting by limiting the number of non-related parties from signing a joint lease. Other than the slight amenities differences, student housing and apartments primarily differ on layout and target market. Further blurring the division is apartment buildings located in close proximity to a university where the occupants are often students even though the management may have never intended to attract this demographic.

[66] Scion Group, 5/5/07 Internal Research Report. Chicago Loop Student Housing Market, 2.

CHAPTER FOUR: MARKET – CHICAGO

Although there are numerous cities throughout the United States that would qualify as adequate target market, the density of universities surrounding the City of Chicago provide a unique opportunity to test the feasibility for a new niche. Chicago is the third largest city by population in the U.S. and contains over 70 colleges and universities in the Greater MSA.[67] Chicago enrollment also exemplifies the nationwide trend of student populations growing at or near the national average.[68]

Illinois Demographic Growth

Before market information for Chicago is discussed, an analysis of the State of Illinois and the student growth of their high school students deserves review since many of these students will filter into the available Chicago based universities. While the US Department of Education (USDOE) reports an estimated increase of 10% in the number of graduating high schools students for the years 2002 through 2014, the USDOE expects the number of college-age students enrolled to increase by 17%. Similarly, Illinois expects high school student graduates to rise to 8%, coming close to the national growth estimate. The key difference, the high-school graduate population is driven disproportionately by the children of immigrants.[69] It remains to be determined how this will have an impact on the target market for green luxury student housing.

For the purpose of quantifying demand in Chicago, DePaul University will serve as the example, urban based college under review. DePaul has undergraduate and graduate

[67] Scion Group, 5/5/07 Internal Research Report. Chicago Loop Student Housing Market, 1.
[68] RREEF Research: Prospects for Student Housing Investment, April 2007, 8.
[69] Scion Group, 5/5/07 Internal Research Report. Chicago Loop Student Housing Market, 1.

students, a large supply of older housing and consistently ranks in the top tier of education. DePaul is also the largest private Catholic school in the nation.[70]

Chicago Universities

The City of Chicago is rich in academic choices, 45 universities alone offer bachelor's and higher degrees. In total, roughly 168,000 students are actively seeking a degree. The following table lists the largest 20 universities and their full-time enrollment.[71]

School (2004-2005)	Full Time Enrollment (Graduate & Undergraduate)
University of Illinois at Chicago	24,812
DePaul University	23,145
Loyola University Chicago	14,764
University of Chicago	14,150
Northeastern Illinois University	12,227
Columbia College Chicago	10,842
National-Louis University	7,345
Roosevelt University	7,234
Chicago State University	7,131
Illinois Institute of Technology	6,472
Saint Xavier University	5,705
Robert Morris College	5,418
International Academy of Design and Technology	2,768
North Park University	2,684
School of the Art Institute of Chicago	2,679
New York Institute of Technology-Ellis College	2,665
The Illinois Institute of Art-Chicago	2,588
The John Marshall Law School	1,682
Harrington College of Design	1,567
Saint Augustine College	1,542

Figure 12: Chicago Enrollment 2004-2005

[70] http://www.depaul.edu/about/key_facts/index.asp, Accessed on 7/26/07.

[71] http://nces.ed.gov/ipeds/cool/, Accessed on 7/17/07.

Market

To give perspective as to how the Universities are spread through the state and city, two maps display the concentration of schools. Beginning with the overall state, it's apparent that most of the educational institutions cluster around Chicago. [72]

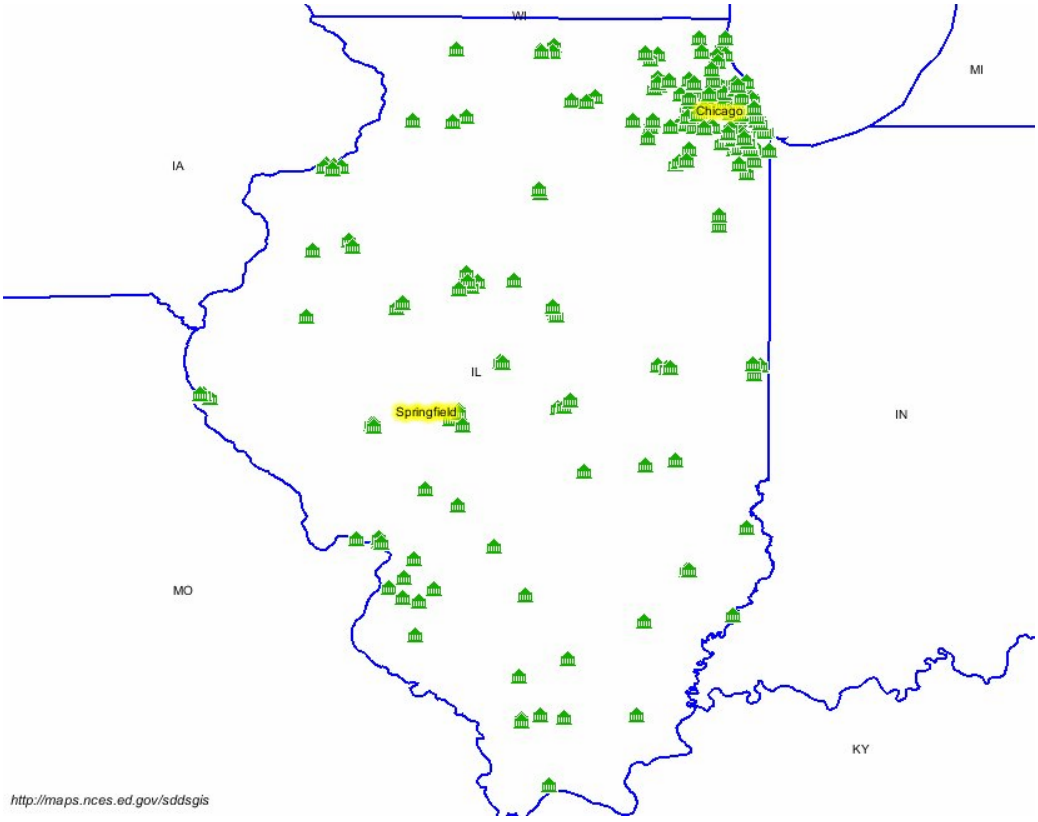

Figure 13: State of Illinois & Active Colleges

The close-up of the City of Chicago shows the dispersion of schools across the city's boundaries. Here, the concentration of schools is around the business CBD or Loop District. Chicago also contains a fairly large urban network of neighborhoods. The

[72] http://nces.ed.gov/surveys/sdds/, Accessed on 7/17/07.

remaining colleges and universities cluster into established suburbs just outside the city core.

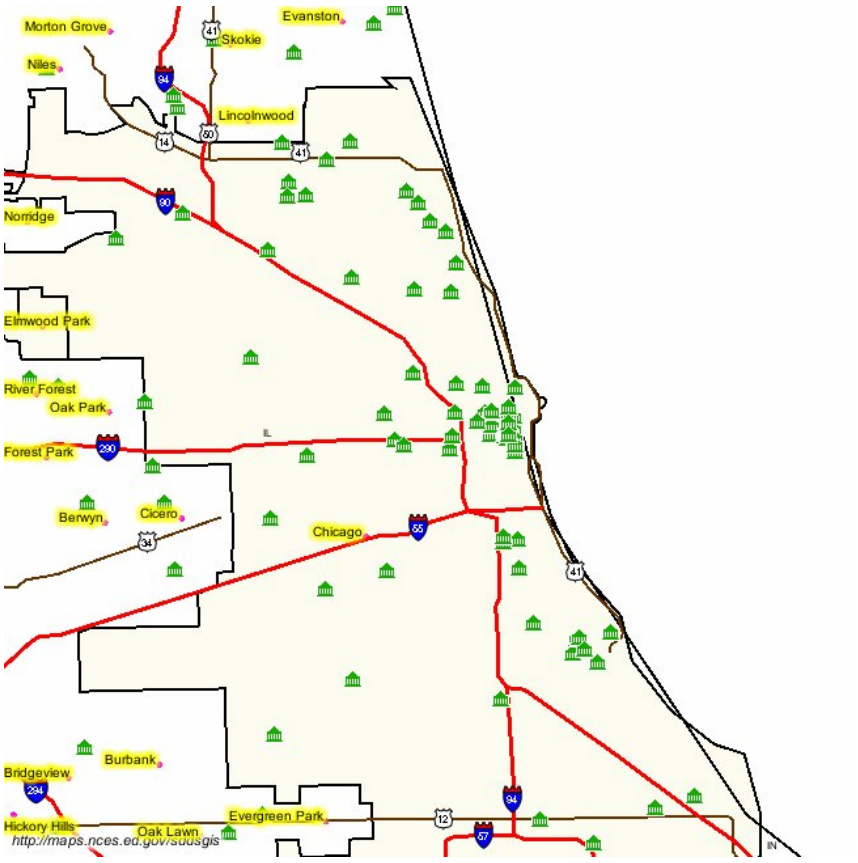

Figure 14: Chicago MSA & Active Colleges[73]

When national or regional developers enter a market to build large scale student housing, they are looking for a critical mass of students. This translates into at least 10,000 full-time undergraduate students.[74] For the purpose of green luxury housing, the critical mass depends more on student population that is willing to pay for market rate housing. One of the benefits of targeting a market with numerous universities is that the

[73] *IBID*

[74] Alan Parkin – Identified 10,000 full-time students as the starting point to analysis

multiple school city has a more stable long term enrollment. College towns may experience larger fluctuations in attendance as students react to positive or negative news relating to a school education or reputation.[75] Chicago's university market consists of a large number of smaller universities. There are roughly 20 universities within the city that have less than 1,000 full time undergraduate and graduate students.[76]

Jason Taylor, the Director of Consulting Services at the Chicago based Scion Group LLC, a full service company that consults, manages and partners on student housing projects throughout the US, explains that the better the education, the less a university focuses on housing – hence, many schools who fall below top tier ratings must sell the student life experience. The University of Chicago is internationally acclaimed for their education, and in the following the above statement, the University lacks a adequate supply of modern housing. Jason went on to explain that Hyde Park (University of Chicago) is the hardest area to develop in the city. This is due to the Alderman who control development rights and have been development restrictive in the past. An Alderman is a member of a municipal assembly or council.[77]

Student Housing Trends

Prior to embarking on a student housing construction project, a prudent developer will conduct an analysis of current trends affecting student housing construction. The main trends revealed in Chicago and through most of the nation are as follows:[78]

1. Green

[75] RREEF Research: Prospects for Student Housing Investment, April 2007, 8.
[76] http://nces.ed.gov/surveys/sdds/, Accessed on 7/17/07.
[77] http://en.wikipedia.org/wiki/Community_areas_of_Chicago, Accessed on 7/20/07.

[78] Interview: Jason Taylor, Scion Group LLC, 6/20/07.

Reasons why:

- Student have always been ahead of the curve, this is reflected in the campus
- New pact among many universities – any building must be built to LEED certification
- Examples of green design include orientation, keep as much of the old building, energy usage, disposal of materials

2. Luxury

Reasons why:

- Students are coming to demand the same environment as at home
- Parents are willing to pay for safety and an above standard quality of living especially as tuition rates continue to increase
- The vast majority of university sponsored housing is old, and lacks modern amenities

3. Move to Urban Universities

Reasons why:

- Students cite desire to be a part of vibrant, managed, safe and un-intimidating environment[79]
- Ethnic, racial and cultural diversity
- Unique city living is becoming more popular than traditional residential campus exemplified by the larger state institutions[80]

Two examples of green and luxury characteristics has been reviewed in Chapter Six: Example Housing. The Chicago based example is Loft-Right, recently built to service the DePaul University campus that encompasses a few green components, but is mostly luxury loft housing. The developer of the project has almost completed another similar site named Automatic Lofts, a renovation of a former factory/office building across from the University of Illinois. The same type of loft finishes and general layout are exemplified. Both buildings are marketed strictly to undergraduate students. An example of green student housing was found locally in Massachusetts at Tufts University. The most unique feature is that the property monitors energy consumption in

[79] Scion Group, 5/5/07 Internal Research Report. Chicago Loop Student Housing Market, 1.
[80] *IBID*

real-time, serving as a continual education tool to the university's student and administration. Monitors are placed at the entrance so that students are constantly reminded of the purpose of the building.

Demand Drivers

Measuring demand in the Chicago market is an integral step in determining the feasibility of luxury student housing. The following steps follow a general guideline on how to estimate demand as spelled out in the previous chapter.

- Total enrollment
- Full time students only, be sure to eliminate part-timers
- Housing capacity on campus

Since the total, full time enrollment of students in Chicago was determined to be roughly 168,000, the next step is to determine the housing capacity on campus. With 45 universities to choose from, a closer look at DePaul offers a snapshot of the market for a well located, urban university. DePaul has a sizable undergraduate and graduate population and has two main campuses, one in the Loop and the other in Lincoln Park, just north of the City's business district.

DePaul University

Full-Time Enrollment: Fall 2006[81]

Undergraduate	14,893
Class of '06	2,833
Housing Capacity:	3,014 (Includes 580 units from Loft-Right) [82]

[81] www.depaul.edu/emm/facts/index.asp#gradEnroll, Accessed on 7/18/07.

[82] All university listed dorms were totaled and added with the 580 beds that Loft-Right operates.

Financial Aid: 65%

Student growth: 3.4%/yr for the last 10 years (Undergrad & Graduate combined)

Notes: 66% of full-time freshman live in residence halls, rest are off-campus

Full-Time Enrollment: Fall 2006

Graduate 7,161

Class of '06 2,707

Housing Capacity: Loop Campus only: 200 units[83]

Financial Aid: Est. 75%

Student growth: 3.4%/yr for the last 10 years (Undergrad & Graduate combined)

Pricing

To ensure the accuracy of green luxury student housing pro-forma rent, the pricing for on and off campus housing has been reviewed.

On-Campus Housing Costs

When comparing to the prior 2006-2007 academic year, every on-campus DePaul unit increased in price by roughly $200, or 2.5%. Additionally, all freshmen in traditional halls are required to pay for a DePaul meal plan for the first two quarters.[84] Meal plans are charged by quarter allowing some flexibility to change mid-year, however, after one change, no additional requests will be granted. The meal plan directly affects the price for on-campus housing since most halls require some level of a meal plan to cover the school food and beverage overhead. Thus, most students when comparing prices among available rentals on and off-campus include the meal plan cost in with rent.

[83] University Center is the only facility to offer graduate housing, located in the Loop district south of Lincoln Park.

[84] http://housing.depaul.edu/lincolnpark/FYinstrucMealPlan.asp, Accessed on 7/17/07.

Meal Plans: 2007-2008	Quarterly	Annually
Apartment Plan	$365	$1,460
Lite Plan (required plan, returning)	$680	$2,720
DePaul Plan (required plan, 1st year)	$855	$3,420
Red Plan	$1,010	$4,040
Blue Plan	$1,160	$4,640
Gold Plan	$1,280	$5,120
Demon Plan	$1,350	$5,400
Commuter Express Plan	$135	$540
Commuter Plus Plan	$260	$1,040

Figure 15: DePaul Meal Plans[85]

No data was found specifying usage of a meal plan when living off campus. However, even when students are off-campus, meal plans continue to be catered to their preferences, revealing that students still utilize university dining halls. Each of the 13 dormitories, flats and apartment units serving the DePaul undergraduate are listed by the annual rent.

[85] http://studentcenter.depaul.edu/MealPlans/PlanOptions.html, Accessed on 7/17/07.

Room Rates: 2007-2008

Belden Racine	
Double Room	$7,146
Super Double	$7,962
Clifton-Fullerton Hall	
Double Room	$7,146
Super Double	$7,962
Single Room	$9,264
Super Single	$9,489
Corcoran Hall	
Double Room	$5,658
McCabe Hall	
1- Bedroom Double	$7,959
2- Bedroom Quad	$7,353
4-Person Suite	$7,041
Munroe Hall	
Double Room	$6,975
Super Double	$7,755
Single Room	$8,016
Super Single	$8,184
Sanctuary Hall and Townhomes	
Studio	$7,041
Regular Hall	$8,223
Large	$8,568
Townhome	$8,568
Seton Hall	
Double Room	$6,627
Super Double	$7,425
Triple Room	$6,264
Super Triple Room	$7,194
University Hall	
Double Room	$6,972
Super Double	$7,755
Triple Room	$6,660
Belden Apartments	
Garden	$7,596
Regular	$8,535
Centennial Hall	
Corner Quad	$8,895
1-Bedroom Double	$8,895
Regular Quad	$8,535
Studio Double	$8,223
Courtside Apartments	
Regular Quad	$8,535
5-person	$8,223
Kenmore Apartments	
All 2315 & Gardens	$7,830
Regular	$8,535
Sheffield Square	
Garden	$8,223
Regular	$8,535

Figure 16: DePaul On-Campus Housing Costs[86]

Depending on the students' choice and availability of units, rents will range from $5,658 up to $9,489. After adding in the Commuter Plus Plan ($1,040/yr) as a potential meal

[86] http://housing.depaul.edu/lincolnpark/rates/roomrates0708.asp, Accessed on 7/17/07.

option at the annual rate, rents would range from $6,698 to $10,529 or $560/mo to $880/mo.

Off-Campus via Non-Profit

Loft-right is the most recent example of Off-Campus housing that was sold/developed by a non-profit which has partially subsidized rents to increase affordability to students. The property is also featured in Chapter 6 as an example project.

	4 Beds	**3 Beds**	**2 beds**	**Floor**
Tier 1	$695 - $1,025	$1,095		2-4
Tier 2	$1,060	$1,130		2-5, superior views & light
Tier 3	$1,095	$1,165	$1,600	5-6, best views & light

Figure 17: Loft-Right Monthly Rates[87]

The Loft-Right website also offers a comparison chart which is a helpful comparison to on-campus housing. Per their calculation, Loft-Right can be cheaper than on-campus housing if the student elects an inferior room location and sleeps 4-6 students per unit.

[87] www.loft-right.com/rooms/, Accessed on 7/18/07.

Cost Comparisons: 2007-2008

Expenses (All Per Person)	Sample Off-Campus Rental	Loft-Right
Monthly Housing/Rent Charge[1]	$760	$695–1,025
Electricity[2]	$25	$30
Gas[2]	$25	Included
Cable Television (Upgraded)	$20	Included
911 Emergency Phone Service	$15	Included
Hi-Speed Internet (Upgraded)	$35	Included
Parking[3]	$35	Included
Furniture Rental[4]	$65	Included
Monthly Total	$980	$725–$1,055
Average Daily Cost	**$33**	**$25–$36**

1: Loft-Right rates for double-occup. beds in 6-person loft & single bed in 4-person loft

2: Higher electricity & gas costs assumed in older, inefficient buildings

3: 1/4 Share of a space; limited free parking available at Loft-Right

4: Assumes apartment-style unit plus bedroom furniture

Figure 18: Loft-Right Cost Comparison

Off-Campus Private Owner

DePaul University offers a link on their website that serves as a resource to students looking to find housing off-campus (DePaul Housing Resource Center)[88]. The following is a sample of the available housing featured:

	Off-Campus					
Neighborhood	**Rooms**	**Studio**	**1 BR**	**2 BR**	**3 BR**	**4 BR**
Bucktown				$800		
Lakeview				$950	$2,100	
Lincoln Park: Low End	$564	$680	$1,195	$733	$733	$2,960
Lincoln Park: High End	$736	$725	$1,395	$1,595	$2,150	
Loop South/Loop West				$875		
Near North Side	$700					
Uptown						
West Rogers Park				$499		
Wicker Park					$500	

[88] http://www.uhr.com/hrc/DePaul/housing/ListingOverview.asp?ut=UClass&ui=123&pv=2&b=n&gu=1&us=GUEST100&r=4033, Accessed on 7/17/07.

Figure 19: DePaul Private Off-Campus Housing Listings

In comparison, Loft-Right charges an average of $4,000 on a 4-bedroom equivalent apartment. That is substantially above the campus housing listing, but still well within the market for off-campus private housing.

Off-Campus Private Owner – Not Student Marketed

The last set of rental information comes from conventional apartments that university students often rent due to the lack of on-campus or near-campus options.

Neighborhood	Studio ($)	1 BR ($)	2 BR ($)	3 BR ($)
Andersonville	N/A	750-1,300	950-2,100	1,400-3,000
Bucktown	N/A	750-1,600	1000-2,100	1,200-3,000
Buena Park	550-950	675-1,500	900-1,800	1,200-3,500
Edgewater	475-100	600-1,200	850-1,700	1,200-2,000
Gold Coast	*700-1500*	*1,000-2,200*	*1,600-4,000*	*2,100-6,000*
Lakeview/Wrigleyville	*625-1,200*	*800-1,600*	*1,200-2,600*	*1,500-5,000*
Lincoln Park	*675-1,400*	*850-2,000*	*1,200-3,000*	*1,700-5,000*
Logan Square	N/A	650-1,000	800-1,500	1,100-2,000
North Center	550-800	750-1,300	1,000-2,000	1,300-2,600
Old Town	675-1,400	1,000-2,400	1,300-3,000	1,800-5,000
Ravenswood	575-800	700-1,200	900-1,600	1,200-2,400
River North	800-1,400	950-2,400	1,400-3,000	2,000-5,000
Rogers Park	450-750	600-1,000	750-1,500	1,000-1,800
South/West Loop	*800-1,300*	*1000-1,800*	*1,400-2,800*	*2,000-3,000*
Streeterville	*700-1,500*	*1000-2,200*	*1,600-4,000*	*2,100-6,000*
Uptown	500-900	675-1,200	850-2,000	1,100-2,400
Wicker Park	N/A	700-1,200	900-2,200	1,200-2,600

Figure 20: Chicago Neighborhood Rent Ranges for 2007[89]

The neighborhoods that are located closet to each of DePaul's campuses have been highlighted in red and italicized. Although four bedroom units are not listed, a common choice among undergraduate students, the progressions of rents for studio to 3 bedrooms is particularly steep due to the proximity of DePaul to Lake Michigan,

[89] http://www.chicagoapartmentfinders.com/pages/graphics/map/caf022_LargeMap_r0.pdf, Accessed on 7/17/07.

transportation and local amenities such as the Magnificent Mile. This indicates a positive trend from new market rate student housing.

Demand

The following chart identifies the demand for housing and then estimates the demand for luxury housing.

DePaul Enrollment: 2007-2008

Class	**Full-Time**	**Beds On-Campus**	**% Housed**
Undergraduates	14,893	3,014	20.2%
Graduates	7,161	200	2.8%
	22,054		

Potential Luxury Market	**Full-Time**	**% Financial Aid**	**Target**
Undergrads (Jun. & Seniors)	7,000	65%	2,450
Graduates	7,161	75%	1,790
			4,240

Class	**On-Campus**	**# Students**	
Freshman	66%	1,989	
Upperclass Undergrads	10.0%	700	(700)
Graduates	2.8%	200	(200)
			3,340

Figure 21: DePaul Demand Estimate

The estimated market for green luxury housing based on upperclass undergraduate and graduate students, is over 3,000 students. This is further confirmed by the near 100% occupancy of Loft-Right mentioned in the preceding sections.

CHAPTER FIVE: FINANCE

As the cost of construction continues to escalate, universities must continually innovate in order to pay for capital replacements and new housing facilities. Increasingly, the schools have been turning to private developers who have the expertise and manpower to more effectively construct student housing. In order to determine a suitable relationship, universities and developers can utilize a development assessment matrix that outlines options for how parties can work together. This ranges from the university selling land to the developer to complete ground up development by the university.

		Option 1	Option 2	Option 3	Option 4	Option 5
		Sale	Ground Lease (no part.)	Ground Lease (with part.)	JV	University Development
Risk	Level	Low	Mid-Low	Medium	Med-High	High
	Reasons	All cash flows are certain	CFs are certain, but visibility of project is at risk	CFs somewhat dependent on success of project	All CFs depend on success of project. Risk shared with JV partner	All CFs depend on success of project. Univ. assumes all risks
Results	Timing/ Control	No future control	No control until the lease expiration (typ 30-40 yrs)	No control until the lease expiration (30-40 yr min)	Control shared with the JV partner	University has complete control
	Return Expect.	Recovery of capital investment plus some growth factor	A fixed annual return based on the value of the underlying land	Some fixed annual return + upside potential based on project	Open to negociation with JV partner	University would receive market based returns
	Cost Impacts	None	Ground lease can be structured to cover debt carry	Ground lease can be structured to cover debt carry, additional risk	Possible equity contribution	University funds all acqusition and dev. costs, until completion, LT refinance

Figure 22: Development Assessment Matrix[90]

[90] Zaransky, Michael H. Profit by Investing in Student Housing. Kaplan, Inc., 2006. 110-111.

A common approach has been a joint venture between the developer and university. The benefit to the developer is access to low-rate financing with on or near campus land essentially assuring high occupancy rates. The University will receive a new project built without burden to their balance sheet since the land is transferred to a non-profit entity where it will gain ownership of the buildings after a stated operating period of typically 30 to 35 years.[91] Regardless of the option is selected, the funding source for the construction and development will determine if a project gets started.

Funding

Universities use four basic sources to determine available funding for housing:[92]

- Current capital reserves & development programs
- Debt financing through bond issuance
  - Most common
  - Greatest degree of control over the development process
- Off Balance sheet financing
  - Must establish separate 501(c) 3 corporation
- Land Lease

With a conventional student housing project, developers work to establish a relationship with the school. Not having to compete with on-campus housing projects in return for the university receiving badly needed private funding is the optimal way to reduce risk and ensure a successful investment. However, establishing these relationships take time and simply may not occur.

In the case for green luxury housing, the scope of construction is smaller in scale that with conventional student housing. With units numbering less than fifty, the importance of securing approval from the local university, although still recommended, is not necessary. The ability of luxury student housing to be successful without low cost

[91] Interview: Thomas George, Wilmorite Inc., 7/20/07.

[92] SchoolFacilities.com, New Trends in Student Housing, 3/29/02, 1.

public financing is a significant advantage over developers seeking to partner with universities. The most sensible option appears to be conventional financing through a commercial lender and private money.

In the case with the housing project, Loft-Right, the developer combined Option 1 and 4 from Figure 22's Development Assessment Matrix. The developer (Smithfield Properties) was approached by DePaul to build dorms instead of condos. Smithfield sold to MJH, the non-profit company that manages/owns most of DePaul's student housing. The developer agreed to build the project, for a fee and for "phantom equity", or a 2nd loan taken out by the non-profit to pay the developer over a set number of years.[93] Realizing that non-profits rarely pay property tax, MJH setup a board with a stakeholder from every constituent who will determine the use of the excess cash flow the property produces. The control over the excess CF helps since the non-profit must appease the local community since no tax is paid on their property holdings.[94]

Feasibility

In order to ensure the success of a student housing project, awareness of each party's preferences is vital to securing a relationship beneficial to both parties. Based on conversations with Scion Group, LLC, the following are the primary motives of universities and private developers:

Universities

1. Quality of building
2. If they should built or 3rd party
3. Residence life
4. Minimal maintenance
5. Cost

[93] Interview: Jason Taylor, Scion Group LLC, 6/20/07.
[94] *IBID*

Developers

1. Guarantees offered by University
2. Referral agreement, Master Lease or None

Development of student housing, although buoyed by future long term growth, carries considerable risk. Depending on the relationship and agreement with the universities, some or all of the risk to develop and deliver a project is part of the experience. Likewise, profit margins are wider for developers who have established a relationship and are able build private housing that remains under control of the developer.[95]

Initially, a developer wanting to break into a market must accommodate a university by agreeing to a fee development, where the University remains in control of the land and ownership/operation of the property. Upon breaking into the market, the developer can use their established relationships to built private developments, which have the blessing of the university and carry much better returns.[96] One key point is when building a private development, feasibility of the project usually depends on the amount of tax abatement since the land is no longer owned by a non-profit. Cities usually welcome the private developers since converting university property into tax producing parcels helps pay for City expenses. In New York, the municipalities offer Tax Pilot Programs that help increase the feasibility of a student housing project by decreasing the tax liability.[97]

Even if all of the above has been determined and a developer is ready to start, attention must be paid to the local development groups. In Chicago, the Alderman control what development is allowed. Often a developer will have to educate the community and replace the perception that student housing is an "animal house" environment.[98]

[95] Interview: Thomas George, Wilmorite Inc., 7/20/07.
[96] *IBID*
[97] *IBID*
[98] Interview: Alan Parkin, Centerline Capital (Formerly at JPI), 6/20/07.

Adequate time during the entitlement process should be paid for well organized community groups. Part of the education process will be spent on explaining policies, resident screening and the general process of how the operations will be maintained.[99] In order to decrease confusion, the developer should clearly identify themselves as a student housing builder.

In order to determine the initial feasibility of green luxury housing, three options have been crafted based on the construction and general layouts of the Loft-Right student housing project in Chicago, IL and Sophia Gordon Hall in Medford, MA., two relevant examples of what green luxury housing aims to accomplish. Although there is no development form that would tell whether a deal is acceptable due to the number of intangible variables, Tom George of Wilmorite explains that they use a 30yr (typical mortgage term) pro-forma as the guiding financial model. Tom explained that this is the single most important tool in assessing potential development opportunities. The head of Scion Group's consulting arm replied to the same question. Although the firm wasn't able to share a generic pro-forma analysis due to their proprietary adjustments, Jason Taylor did recommend adapting "a multi-family rental pro-forma as they are identical (with the greatest differences being "residence life" operating expenses and "by-the-bed" pricing (as opposed to by the unit)." "Also, we have found contractors' fees for student housing to be in-line with multi-family and condo construction."

[99] Interview: Alan Parkin, Centerline Capital (Formerly at JPI), 6/20/07.

Comparables

	Loft-Right	Sophia Gordon Hall
Size (sf)	265,000	61,100
Units	160	30
Beds	580	126
Avg. sf/bed	150	150
Avg. unit size	1,030	1,048
Total dev. cost	$73,400,000	$23,000,000
Cost/sf	$277	$376
Residential (sf)	164,833	61,100
Retail (sf)	16,000	-
Common area (sf)	53,000	14,664
Garage (sf)	28,167	-
Study room (sf)	3,000	15,000
Avg. sf/bed	284	249

Figure 23: Cost and Size Comparisons[100]

The benefit of reviewing the construction and sizes of Loft-Right and Sophia Gordon Hall (SGH) reveals the trend that student housing is starting to follow. Loft-Right, being based in Chicago offers the most accurate construction cost data since the property was built in 2006. The finishes are high-end, the property is located adjacent to the DePaul campus and caters to the luxury formula as described in this thesis. Sophia Gordon Hall is the ideal example how sustainable development is applied to student housing. Every feature of the property has been carefully reviewed for green construction. The construction cost data is less reliable since the market in Medford, MA is not similar to Chicago, IL. However, the size of the units serve as a double check to the general layout for new student housing.

Since there are numerous ways to design the layout of student housing, the following three options attempt to address the most common. Option 1 follows most of what Loft-Right and SGH offer, four bed, single room occupancy suites connected with a common

[100] Information for the Loft-Right & SGH housing was found on each properties respective websites (www.loft-right.com and www.tufts.edu/tie/SGH/). The Common Areas, garage, study rooms are estimates and have not been confirmed.

area bathroom, kitchen and living room. Option 2 address the apartment style layout, a design that has increasing become more popular among graduate students as mentioned earlier in the thesis. Lastly, Option 3 is a hybrid of the first two models in an attempt to combine the housing preferences of Undergraduate and Graduate students.

Assumptions

Total Beds	50
Buiding Height	3-5 stories
Land Value	Est. at $100 - $150/sf
Green Premium	6-7%
Expenses	Kept low due to Green Premium
Total Construction Cost	At least 10% above Loft-Right
Equity Investor	10% Return on Cash Flow
Valuation Cap Rate	7%

Figure 24: Feasibility Inputs

In order to compare each option fairly, the above assumptions are held constant for each investment. The Green Premium is particularly high due to the lack of Chicago based incentives for solar arrays and photovoltaics, a substantial part to SGH's reduction in their energy usage. Expected green premiums usually range between 0% and 3% of the total construction cost.[101] This is critical since utilities will be included as part of the rent charge to potential students. The upfront cost also helps to ensure that 30% operating costs can be maintained. Due to never ending escalating construction costs, a 10% margin above Loft-Right development costs was maintained across the three options. A cap rate of 7% was chosen since the proposed property wouldn't qualify as an institutional asset due to the building size, resulting in a likely lower valuation. Institutional properties have been trading as low as 6.25% to 6.85%, 50 to 100 basis points above all apartments.[102] [103]

[101] http://www.nrdc.org/buildinggreen/factsheets/cost.asp, Accessed on 7/20/07.

[102] http://nreionline.com/property/multifamily/real_estate_student_housing_graduates/, Accessed on 7/20/07.

[103] RREEF Research: Prospects for Student Housing Investment, April 2007, 14.

Option 1: SRO	
4 Bed Unit Size (sf)	1,000
Bedroom Size (sf)	150
Units in Bldg	12.5
Loss Factor	30%
Total Building SF	16,250
Build Costs	
Hard + Soft + FFE/sf	$220
Green Premium/sf	$20
Fees (Cont., Dev.)/sf	$25
Total Cost/sf	$265
Total Costs	$4,306,250
Land	$750,000
Total Dev. Cost	$5,056,250
Total Dev. Cost/sf	$311
Funding	
Equity - 20%	$1,011,250
Financing Amt.	$4,045,000
Loan Rate	8%
Annual Debt Load	$323,600
Income	
Rent/Bed	$1,000
Rent/mo.	$50,000
Vacancy @ 5%	$30,000
Total Annual Rent	$570,000
Expenses (30%)	$171,000
NOI	$399,000
After-Tax	
Debt	$323,600
Tax (1% of value)	$50,563
Equity Investor	$101,125
Net Income	($76,288)
Returns	
Cash on Cash	-7.54%
Valuation	$5,700,000
Cost to Build	$5,056,250
Value Created	$643,750

Option 2: Apartment Layout	
2 Bed Unit Size (sf)	700
Bedroom Size (sf)	175
Units in Bldg	25
Loss Factor	30%
Total Building SF	22,750
Build Costs	
Hard + Soft + FFE/sf	$220
Green Premium/sf	$20
Fees (Cont., Dev.)/sf	$25
Total Cost/sf	$265
Total Costs	$6,028,750
Land	$750,000
Total Dev. Cost	$6,778,750
Total Dev. Cost/sf	$298
Funding	
Equity - 20%	$1,355,750
Financing Amt.	$5,423,000
Loan Rate	8%
Annual Debt Load	$433,840
Income	
Rent/Bed	$1,200
Rent/mo.	$60,000
Vacancy @ 5%	$30,000
Total Annual Rent	$690,000
Expenses (30%)	$207,000
NOI	$483,000
After-Tax	
Debt	$433,840
Tax (1% of value)	$67,788
Equity Investor	$135,575
Net Income	($154,203)
Returns	
Cash on Cash	-11.37%
Valuation	$6,900,000
Cost to Build	$6,778,750
Value Created	$121,250

Option 3: Mix of SRO & Apt	
2 & 4 Bed Unit (sf)	850
Bedroom Size (sf)	160
Units in Bldg	17
Loss Factor	30%
Total Building SF	18,785
Build Costs	
Hard + Soft + FFE/sf	$220
Green Premium/sf	$20
Fees (Cont., Dev.)/sf	$25
Total Cost/sf	$265
Total Costs	$4,978,025
Land	$750,000
Total Dev. Cost	$5,728,025
Total Dev. Cost/sf	$305
Funding	
Equity - 20%	$1,145,605
Financing Amt.	$4,582,420
Loan Rate	8%
Annual Debt Load	$366,594
Income	
Rent/Bed	$1,100
Rent/mo.	$53,600
Vacancy @ 5%	$30,000
Total Annual Rent	$613,200
Expenses (30%)	$183,960
NOI	$429,240
After-Tax	
Debt	$366,594
Tax (1% of value)	$57,280
Equity Investor	$114,561
Net Income	($109,194)
Returns	
Cash on Cash	-9.53%
Valuation	$6,132,000
Cost to Build	$5,728,025
Value Created	$403,975

Figure 25: Development Feasibility

Although all three properties have negative net income, each option creates overall value. Depending on the movement of the cap rate, the value could either by wiped out or substantially improved. The results also indicate why student housing is heavily reliant on university tax-exempt funding and property tax abatement. If the loan and tax costs were reduced, each property would become tax flow positive after paying a hefty 10% return to the private equity investor. Rents in each option are below what Loft-Right has been able to charge to their renters. In particular, Loft-Right charges $1,600 for an apartment style, two bedroom unit with views of the Chicago skyline.[104] Expectedly, larger properties are able to offer more amenities than comparable quality 50 bed properties due to the ability to spread overhead costs across a greater number of units.

In order to induce private equity into private student housing, expectations for returns, hold period, target market and unit layout must be further refined to yield an acceptable profit. One possible solution may lie in decreasing the unit size to reduce the construction costs and subsequent debt load. Rental increases could also help alleviate the cash crunch experienced within the first few years. Since student housing rental increases have outpaced conventional apartments by over 3% annually, a substantial margin when considering apartment nationwide have been increasing 3% between 2000 & 2005[105], a sensitivity analysis helps to show at what point an investment becomes feasible.

[104] www.loft-right.com/rooms/, Accessed on 7/25/07.

[105] RREEF Research: Prospects for Student Housing Investment, April 2007, 12.

Sensitivity Analysis

Loan @ 3%	Option 1	Option 2	Option 3
Net Income	125,963	116,948	119,927
Cash on Cash	12.46%	8.63%	10.47%
Loan @ 4%			
Net Income	85,513	62,718	74,102
Cash on Cash	8.46%	4.63%	6.47%
Loan @ 5%			
Net Income	45,063	8,488	28,278
Cash on Cash	4.46%	0.63%	2.47%

Rent: -100	Option 1	Option 2	Option 3
Net Income	(118,288)	(196,203)	(151,194)
Cash on Cash	-11.70%	-14.47%	-13.20%
Rent: +100			
Net Income	(34,288)	(112,203)	(67,194)
Cash on Cash	-3.39%	-8.28%	-5.87%
Rent: +200			
Net Income	7,713	(70,203)	(25,194)
Cash on Cash	0.76%	-5.18%	-2.20%

Figure 26: Feasibility Testing

The feasibility model was stressed by adjusting the loan rate and rent payments separately. Assuming a development could finance through university sponsored tax exempt bonds, the loan rate has reduced to 3% to 5%, dramatically reducing the debt load and pushing up yields. Depending on the circumstance, rent was stressed in both directions. Although it more likely that rents would only be higher due to the limited available supply, the stress test serves the purpose of reflecting the damage inflicted to yields. Even with a increase of $200/mo. to each option, all options are not immediately feasible. By far the most sensitive component remains the mortgage rate.

Institutional Money vs. Local Developer

Inevitably, institutional money, backed by pension funds, large corporate companies and insurance companies will make their way into student housing. At first glance, this may serve as a deal breaker for the small, local developer, but they shouldn't be counted out. Only three REITs and a handful of national developers operate solely in the student housing market. Even if you add up all beds owned by the REITs, their market share is still less than 3%[106].

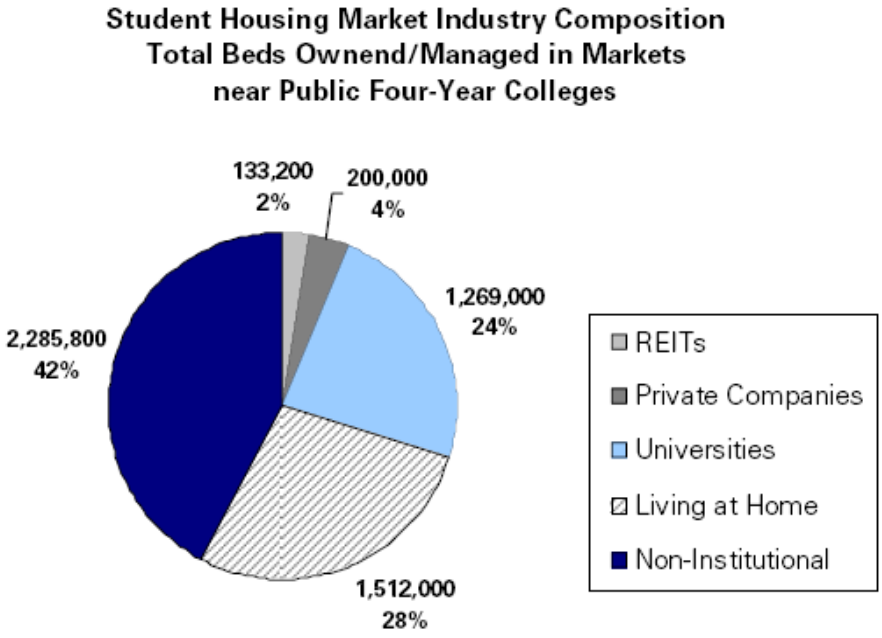

Figure 27: RREEF Research Estimated Ownership Composition

Additionally, institutional investors seek acquisitions that are greater than $10 million.[107] The target size for green luxury housing will most likely not exceed institutional requirements since the unit size will be kept to fifty units or less. Institutional buyers have presently focused on the Southern states where student populations are projected

[106] RREEF Research: Prospects for Student Housing Investment, April 2007, 9.
[107] Zaransky, Michael H. Profit by Investing in Student Housing. Kaplan, Inc., 2006. 41.

to increase the most. However, Cristian Galli of Taurus Investments warns that local developers will not fare very well in a public Request For Proposal (RFP) process.[108] These types of public projects are a competition for the developer with the best financing and past experience since bidding is open to any developer.

Despite the continued fragmentation of the overall student housing market, any agreement with a public university vs. a private university carries significant carry cost risk. Public Universities in particular require an additional layer of administration. Due to the amount of red tape and organizational procedures that govern public universities, a developer may have to sit on the project for a number of years until approvals are granted.[109] In the meantime, construction costs could escalate out of control, potentially turning a profitable project into a non-starter. The developer with deep pockets serves a much better chance at lasting through the approval and entitlement process.[110]

Pricing

The rents received from student housing are a critical component in determining a project's feasibility. Analysis of the markets on & off-campus rents, amenities, age and proximity to campus all affect the price a potential project can charge. A common rule of thumb is that student housing projects receive 20% more income per square foot than conventional apartments.[111] This can serve as a baseline to determine if the estimated rents make sense. In the case of Loft-Right, the most expensive rents are twice the cost of on-campus.[112]

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[108] Interview: Cristian Galli, Taurus Investments, 6/24/07.

[109] Interview: Thomas George, Wilmorite Inc., 7/20/07.

[110] *IBID*

[111] Interview: Alan Parkin, Centerline Capital (Formerly at JPI), 6/20/07.

[112] www.loft-right.com/rooms/, Accessed on 7/25/07.

Luxury apartment rents, which already attract students, serve as a real-time comp to determine a new properties pricing. In order to keep costs of construction in-line with the estimated rents, constant review of the property compared to other comparable property will help to ensure a successful project. Universities will increase on-campus housing costs each year or two in order to keep up with the rising cost of operation.

Profitability

Profits will be determined by the type of agreement negotiated between the developer and if there is university affiliation. An active national developer of student housing reveals that profits with their institutional partner were 16% leveraged.[113] The developer wasn't required to come up with any equity. Wilmorite development, based out of Rochester, NY deals with multiple scenarios, but begins to become interested when developments or partnerships reach a 15% return. Tom George of Wilmorite explains however that a specific return isn't always possible to calculate. One project that Wilmorite presently is working is located in Maryland and involves a $500 million build out over ten years.[114] Returns may be received over a long period of time and require significant upfront costs.

For green luxury student housing, a likely scenario will be a developer acquiring land without the backing of a university. In this case, the property will be subject to property tax which will have an impact on profitability unless the market will bear rents to compensate for the added cost. In order to address the lack of feasibility, additional scenarios may include agreements to lease the land, thus reducing the upfront cost of acquisition. This will help alleviate debt and tax payments.

[113] Interview: Alan Parkin, Centerline Capital (Formerly at JPI), 6/20/07.
[114] Interview: Thomas George, Wilmorite Inc., 7/20/07.

Partnering with a university may force the developer to give up controls and some profits, but certainly would help to spread the risk across two parties and increase the likelihood of a successful project. As Wilmorite Inc. has practiced, developing housing with the intention of transferring ownership of the property to the University as a specified future date turns a development more into a annuity payment, effectively lengthening the time period to recoup the investment and proceeds. This also eliminate the developers residual profit from the sale of the property, but may allow a deal to occur that otherwise would have been scuttled.

CHAPTER SIX: EXAMPLE HOUSING

Loft-Right: Urban Dorm

University Affiliation: DePaul
Accommodates: 160 units/580 beds
Size: 270,000 sq. ft.
Address: 1237 W. Fullerton, Chicago, IL
Owner: MJH Education Assistance Illinois IV LLC, a not-for-profit
Developer: Smithfield Properties LLC

Design[115]

The six-story steel-and-glass building designed by Antunovich Associates is furnished with Herman Miller classics by George Nelson, as well as pieces from Knoll, Vitra and Kartell. A typical shared living room has plastic molded chairs and plywood tables.

Amenities

- Ultra-high-speed Internet connections
- High definition-ready TV connections
- High-speed wireless access (45 megabits/second, equal to 30 dedicated T1s)
- Urban loft contain polished concrete floors, floor-to-ceiling windows, exposed duct work and steel ceilings
- Ground floor lounge/game room
- Ground floor retail
- Green roof
- Throw rugs in the bedrooms which will be swapped out every five years

[115] Guy, Sandra. "Lofts Raise High-Tech Bar for Student Housing: Wi-Fi, HDTV Keep Kids." Chicago Sun-Times 5/3/06.

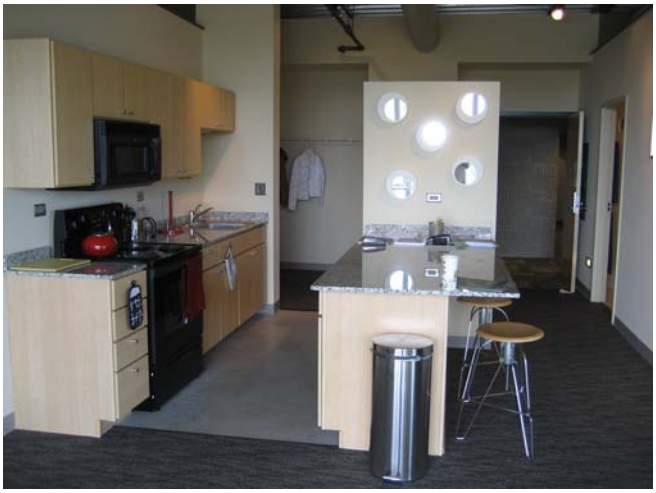
Included in Rent

All utilities, high-speed Internet and WiFi, a heated garage and 24-hour security.

Each unit will house two to four students of the same gender. Each student will have his or her own bedroom, and every bedroom door locks. Each unit has two bathrooms.

Rent

$1,025 per student each month, plus a flat $25 a month fee for utilities. Higher-cost units with city views increase to $1,600 a month per student.



Sophia Gordon Hall: Green All The Way

University Affiliation: Tufts
Accommodates: 30 units/126 beds
Size: 61,000 sq. ft.
Address: 15 Talbot Avenue, Medford, MA
Owner: Tufts University
Developer: Linbeck

Design

It consists of two separate four-story buildings (East and West) connected by a corridor on the first floor. The majority of both buildings are made up of dormitory units, and individual living spaces grouped with a lounge, kitchen, and bathrooms. The first and second floor of the West building also house a multi-purpose area which can be used as a theater or exhibit space. The first floor of both buildings, including the corridor connecting them, lies partially underground, and houses the laundry area, mechanical spaces, and storage areas. The first floor of the East building also houses common lounge and corridor areas as well as some dormitory area.

Amenities

- Ground-up commitment to environmental sustainability
- Applying for Silver LEED certification
- Low energy usage: 30 percent less energy and 30 percent less water
- Real-time monitoring of the building's energy, telecasted to a screen at the building's entrance, along with other information about the building's sustainability, provided by the Tufts Climate Initiative.[116]

[116] http://www.tufts.edu/tie/tci/, Accessed on 7/17/07.

Green components incorporated:

- Energy reduction: Energy Use Reduction through the building's design, apartments, bathrooms and laundry have water efficient appliances, low-flow faucets, dual-flush toilets and a waterless urinal.
- Technology: Solar Thermal & Photovoltaic rooftop arrays provide hot water and generate electricity to minimize energy loads
- Green Energy: Tufts has purchased renewable energy certificates for Green-e certified wind power in an amount equivalent to the electricity needs of Sophia Gordon Hall
- Air: Improved Environmental Air Quality through the selection of carpet and sheet vinyl adhesives, sealants and paints that have very low or no VOC emissions.
- Recycling: 75% of the waste from the building site will be recycled or salvaged with a waste management program
- Reduced Heat Island on Site: Energy Star® roofing reflects heat away from the building and lowers the cooling demand for summer months
- 10% Recycled/Renewable Materials: 10% of the materials in the design contain post-consumer or post-industrial recycled content.
- New Glass Technologies: The Low-E insulated windows and the ceramic-fritted and louvered glass walls reflect heat away from the curtain wall in the summer months and reflect radiant heat indoors in the winter months.
- Storm-water Management: An underground storm-water retention system collects runoff from impervious surfaces and recharges it on-site, minimizing the load on the city's storm drains.
- Sustainable Site Strategies: The landscape design maintains and adds to the existing natural shade. It also minimizes water use. Zero-cut-off site lighting eliminates the spillover of light into places where it is not needed.

- Educational Displays: Signs and labels throughout the building educate users about Sophia Gordon Hall's unique features. A screen showing real time monitoring of the building's energy use appears at the entrance.

Included in Rent

All utilities, high-speed Internet and WiFi, and 24-hour security provided by on-campus police.

The dormitory contains only single-occupancy rooms, which are grouped into 24 four-person and four six-person suites.

Rent

On-Campus Housing: $10,160/yr[117]

Figure 28: Sophia Gordon Hall[118]

[117] http://admissions.tufts.edu/?pid=175, Accessed on 7/16/07.

[118] http://media.www.tuftsdaily.com/media/storage/paper856/news/2006/04/25/News/Will-Sophia.Gordon.Shift.Tufts.Housing.Culture-1875899.shtml, Accessed on 7/19/07.

Figure 30: SGH Construction

Figure 29: Thermostat in Sophia Gordon Hall[119]

[119] http://www.tufts.edu/home/feature/?p=climate, Accessed on 7/19/07.

CONCLUSION

In the high risk industry of real estate development, uncertainty in a market is the expectation. Contrarily, student housing demand has already been quantified years in advance through enrollment at elementary, middle and high school. The growth in enrollment puts enormous pressure on universities across the nation to try to keep up. Coupled with the demand for student housing, a new approach to development that centers on environmental sustainability will become standard practice once buyers, suppliers and builders work out the current inefficiencies. Having the foresight to see these two trends merge provides a unique opportunity for the developer who can position themselves to capitalize on the convergence.

Green luxury student housing serves to provide a market where large scale developments are less likely to occur due to land constraints from the encroaching city or pressure from community groups that don't want a 500 bed dorm adding density to their neighborhood. Green luxury housing that is well positioned relative to the universities will carve out a profitable niche that isn't as dependent on university subsidies such as abatement from taxes. Where graduate students and upperclassman were previous left to find off-campus housing, a product type will be built directly based on their distinct living habits.

Although green luxury housing serves to define a new market niche and attempt to fill an untapped demand, there still are considerable obstacles to creating a successful product. There is risk that the market may not distinguish green luxury housing from conventional luxury apartments. This thesis' simple attempt to estimate demand for the market may involve too few variables besides segregating student demand based on financial aid. Much of the student growth that is occurring within the State of Illinois and through the nation is from minorities. With the student population becoming increasingly diverse, their student housing preferences have yet to be determined. Parents of many of the wealthiest students end up buying condos for their children as

an investment versus paying high rents throughout their children's collegiate experience. Lastly, the ability to pin down graduate versus undergraduate housing requirements will need additional refining.

Regardless, demand for student housing in general will increase and housing will need to be supplied for all ranks of enrollment. The opportunities will increase even with the addition of market players since many of the housing options will depend on the relationship with the universities, local market knowledge and competing existing properties. Green luxury housing serves to fill a newly defined niche that is currently without many options for the new crop of students searching for quality off-campus housing.

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APPENDIX A: CHICAGO UNIVERSITIES

School (Omitted if below 100 students)	Full Time Enrollment (Graduate & Undergraduate)
University of Illinois at Chicago	24,812
DePaul University	23,145
Loyola University Chicago	14,764
University of Chicago	14,150
Northeastern Illinois University	12,227
Columbia College Chicago	10,842
National-Louis University	7,345
Roosevelt University	7,234
Chicago State University	7,131
Illinois Institute of Technology	6,472
Saint Xavier University	5,705
Robert Morris College	5,418
Internat'l Academy of Design and Technology	2,768
North Park University	2,684
School of the Art Institute of Chicago	2,679
New York Institute of Technology-Ellis College	2,665
The Illinois Institute of Art-Chicago	2,588
The John Marshall Law School	1,682
Harrington College of Design	1,567
Saint Augustine College	1,542
Rush University	1,452
East-West University	1,021
Argosy University-Chicago	972
Chicago School of Professional Psychology	962
Kendall College	780
Westwood College-Chicago Loop	623
Westwood College-O'Hare Airport	604
Illinois College of Optometry	599
Catholic Theological Union at Chicago	503
Adler School of Professional Psychology	455
American Academy of Art	410
Lutheran School of Theology at Chicago	361
McCormick Theological Seminary	256
Spertus College	240
Erikson Institute	233
VanderCook College of Music	227
Chicago Theological Seminary	220
Midwest College of Oriental Medicine	170
Pacific College of Oriental Medicine	148
Meadville-Lombard Theological School	121
Shimer College	107
Total Students	**168,099**

APPENDIX B: LOFT-RIGHT OFF-CAMPUS COMPARISON

Cost Comparisons: 2007-2008

Expenses (All Per Person)	Sample Off-Campus Rental	Loft-Right
Monthly Housing/Rent Charge[1]	$760	$695–1,025
Electricity[2]	$25	$30
Gas[2]	$25	Included
Cable Television (Upgraded)	$20	Included
911 Emergency Phone Service	$15	Included
Hi-Speed Internet (Upgraded)	$35	Included
Parking[3]	$35	Included
Furniture Rental[4]	$65	Included
Monthly Total	$980	$725–$1,055
Average Daily Cost	**$33**	**$25–$36**
Benefits / Amenities		
Building Age	20–80 yrs.	1 year
Typical Bedroom Size	Varies	150 Sq. Ft.
Lofted Storage Areas	N	Y
No Roommate Rent Liability	N	Y
No Roommate Bills Liability	N	Y
24-Hour Lobby Staff	N	Y
Building Fire Suppression System	N	Y
Lincoln Park Location	Maybe	Y
Card Key Access System	N	Y
Locking Bedrooms	Maybe	Y
Fully-Furnished Spaces	N	Y
Wi-Fi Access in Common Areas	N	Y
Study Lounges /Social Facilities	N	Y
Laundry Facilities	Y	Y
Urban "Loft" Finishes	N	Y
Condo-Quality Units	N	Y
FREE Covered Parking	N	Y (ltd.)
Kitchen w/ New Appliances	N	Y
24/7 On-Site Management	Maybe	Y
Storage Space Available	N	Y
Laundry Service Available	N	Y
Dry Cleaning Available	N	Y
Maid Service Available	N	Y
Panoramic Skyline Views	N	Y
Retail Amenities	Maybe	Y
Per-Unit HVAC System	Maybe	Y
Ability to Pay w/ Credit Card	N	Y
Security Deposit Amount	$700–1500	$500

1 — Loft-Right rates for double-occup. beds in 6-person loft & single bed in 4-person loft
2 — Higher electricity & gas costs assumed in older, inefficient buildings
3 — 1/4 Share of a space; limited free parking available at Loft-Right
4 — Assumes apartment-style unit plus bedroom furniture
Note: Loft-Right Rates based on 350 days of occupancy

APPENDIX C: CHICAGO INCENTIVES FOR GREEN TECHNOLOGY

Updated April 2004

Financial Incentives for Building Green

Prepared for the City of Chicago

Source	Name of program	Who is Eligible	Use of Funds	Amount	Resource
Federal	Solar and Geothermal Business Energy Tax Credit	Commercial/Industrial Sectors	Solar water heat, active solar space heat, solar thermal process heat, photovoltaics, geothermal electric.	10% max. limit $25,000 per year plus 25% of the total remaining after the credit is taken.	www.mdv-seia.org/federal_incentives.htm
Federal	5-year Accelerated Capital Depreciation for Solar Energy Property	Commercial Sector	Equipment that uses solar energy to generate electricity.	100% over 5 years	Consult your tax adviser or accountant
U.S. DOE	Renewable Energy Research And Development Grants	For-profit organizations, private non-profit institutions, intrastate, interstate, and local agencies and universities	R&D of solar buildings, PVs, solar thermal, biomass, alcohol fuels, wind, hydropower, hydrogen and geothermal technologies.	$10K to $100K	www.cfda.gov/static/81087.htm
U.S. DOE	Conservation Research and Development Grants	For-profit organizations, private non-profit institutions, State and local governments	Develop and transfer energy conservation technologies to the scientific and industrial communities, state and local governments. Within the areas of industry, power, transportation or buildings.	$50,000 to $500,000	www.cfda.gov/static/81086.htm
U.S. DOE	Inventions and Innovation Program	U.S. Citizens, U.S.-owned small businesses or institutions of higher learning	Conducting early development and establishing technical performance of innovative, energy saving ideas and inventions.	Phase I: $100,000 Phase II: up to $40,000	marilyn.burgess@ee.doe.gov
U.S. DOE	Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs	Small Business (defined as a for-profit organization with no more than 500 employees) STTR grants must involve a substantial cooperative research collaboration between a small business and a non-profit research institution	Energy efficiency and renewable energy: zero net energy buildings; low cost power electronics and sensors for distributed energy resources; bioproducts and bioenergy research; heat transfer research; recovery; recycle and reuse of energy intensive materials; reactive separations.	SBIR Ph I: Up to $100,000 SBIR Ph II: Up to $750,000 STTR Ph I: Up to $100,000 STTR Ph II: Up to $500,000	http://sbir.er.doe.gov/sbir
U.S. EPA	Small Business Innovation Research Program	Small Business (defined as a for-profit organization with no more than 500 employees) Grants for R&D	Monitoring and control of air pollution; safe buildings and water security; wastewater management, etc.	Ph I: Up to $70,000 Ph II: Up to $225,000	http://es.epa.gov/ncerqa/sbir/index.html
Illinois Department of Commerce and Economic Opportunity	Renewable Energy Resources Program	Anyone in Illinois	Investment, development and use of renewable energy resources	2004 funding pending—check web site for status	www.illinoisbiz.biz/com/energy/renewable.html

Updated April 2004

Financial Incentives for Building Green

Prepared for the City of Chicago

Source	Name of program	Who is Eligible	Use of Funds	Amount	Resource
Illinois Department of Commerce and Economic Opportunity	Special Assessment for Renewable Energy Systems (property tax exemption)	Commercial, industrial, residential sectors in Illinois	This statute allows for a special assessment of solar energy systems for property tax purposes. Soar equipment is valued at no more than a conventional energy system. Eligible equipment includes active and passive systems, as well as wind and geothermal systems.		David Loos, dloos@commerce.state.il.us
Illinois Clean Energy Community Foundation	Green Building Grants for Construction Projects	Non-profit organizations and local and state government agencies	New construction or major rehabilitation projects for Energy Efficiency (creating model energy-efficient public buildings throughout Illinois, with funding available for the incremental costs of designing and/or commissioning new facilities to be highly energy efficient), or Renewable Energy (installing small scale solar or wind power generation systems).	Varies	www.illinoiscleanenergy.org
Illinois Clean Energy Community Foundation	Energy Efficient Lighting Upgrades in K-12 Schools	Public and private K-12 schools in Illinois	Lighting upgrades that reduce electricity demand by at least 10 kilowatts. Projects may be no further along than lighting evaluation and design stage.	Up to $800 per kilowatt of reduction in electricity, no more than $40,000 per school or $120,00 per school district.	www.illinoiscleanenergy.org
Illinois Clean Energy Community Foundation	Energy Efficient Lighting Upgrades in Colleges and Universities	Public and non-profit colleges and universities in Illinois with an undergraduate enrollment of at least 400	Energy-saving upgrades to lamps, ballasts and/or controls in existing indoor lighting systems. Projects may be no further along than lighting evaluation and design stage.	Size of grant will be based on the amount of electricity demand reduction the project, as installed, yields.	www.illinoiscleanenergy.org
Illinois Clean Energy Community Foundation	Renewable Energy	Non-profit organizations, educational institutions, and local or state government agencies	Development of consumer demand for renewable energy; policy development and demonstration projects to support growth in community- and utility-scale wind or solar power generation; and projects demonstrating the market viability of solar thermal, biomass, fuel cells or emerging renewable energy technologies.	Varies	www.illinoiscleanenergy.org

Updated April 2004

Financial Incentives for Building Green

Prepared for the City of Chicago

Source	Name of program	Who is Eligible	Use of Funds	Amount	Resource
Illinois Clean Energy Community Foundation	Renewable Energy	Non-profit organizations and local or state government agencies	Installing small-scale solar or wind power generation systems. Foundation funding for these systems will be limited so that no more than 80% of the total cost of a project is being provided by the Foundation and by government renewable energy funding programs.	For solar photovoltaic systems, $2,000 per kW up to 50kW per site. For mall wind turbine systems, $500 per kW up to 20kW per site.	www.illinoiscleanenergy.org
Residential Energy Services Network (RESNET)	Energy Efficient Mortgages (EEMs)	Home Buyers/Owners	Mortgages with higher loan-to-value ratios due to the lower operating costs of a more efficient dwelling.		www.natresnet.org/herseems/default.htm
Federal Solar Energy Financing Programs	Financing, mortgage and loan programs for solar energy systems	Businesses and residences	Federal incentives and funding initiatives for business and residential solar systems.		store.aapspower.com/renennew.html
City of Chicago Department of Housing	Historic Chicago Bungalow Initiative Energy Savers Grant Program	Certified Historic Chicago Bungalow owners who meet eligibility criteria	A 50% matching grant for energy-efficient improvements involving windows, doors, insulation, furnaces, water heaters, air conditioning systems, and/or solar thermal systems.	Up to $2,000	www.chicagobungalow.org
City of Chicago Department of Housing	Historic Chicago Bungalow Initiative Energy Efficient Appliance Voucher	Certified Historic Chicago Bungalow buyers or owners who meet eligibility criteria	A $1,000 voucher for one energy-efficient home appliance.	$1,000	www.chicagobungalow.org
City of Chicago Department of Housing	Historic Chicago Bungalow Initiative Bungalow Tax Credit	Buyers of Certified Historic Chicago Bungalows who meet income and other criteria	A Bungalow Tax Credit is available to qualified applicants through certain Bungalow Lenders. Applicants who meet income guidelines may be eligible to receive an annual federal income tax credit for 50% of the interest (up to $2,000) they pay on a rehabilitation loan.	Up to $2,000	www.chicagobungalow.org
Illinois Housing Development Authority	Historic Chicago Bungalow Initiative IHDA Rehab Grant Program	Any income-eligible owner of a certified Historic Chicago Bungalow who undertakes certain types of repairs and meets other eligibility criteria	Grants of up to$3,000 (low income) and $5,000 (very low income) to income-eligible bungalow owners.	$3,000 or $5,000	www.chicagobungalow.org/ihdagrant.html
ComEd	Chicago PV Incentive Program	Eligible individuals and organizations	Purchase of photovoltaics from Spire Solar Chicago	$1000/kilowatt	www.chicagosolarpartnership.com
Home Depot	The Home Depot Foundation	Non-profit organizations	Environmental grants encourage green building and sustainable design in affordable housing.	Grants typically range from $5,000 to $25,000.	www.homedepotfoundation.org

Updated April 2004

Financial Incentives for Building Green

Prepared for the City of Chicago

Source	Name of program	Who is Eligible	Use of Funds	Amount	Resource
The Kresge Foundation	Green Building Initiative	Non-profit organizations.	Grants to fund the planning/ design of green buildings; educational materials and green building workshops also available to non-profits.	Varies	www.kresge.org/initiatives/
The Field Foundation of Illinois	Environment Grants	New and established environmental organizations; mostly in Chicago metro area	For efforts in public policy, advocacy, site-based projects and public engagement to prevent and reduce pollution of the natural environment, protect and restore the natural environment and promote sustainable regional growth, land use and development.	Seldom exceeds $50,000.	www.fieldfoundation.org/general-guidelines.html
Tellabs Foundation	Environment	Non-profit organizations that effectively allocate funds to local and national protection/improvement programs.	Support for programs to encourage understanding and the protection of the environment.	$10,000 and above.	www.tellabs.com/about/foundation.shtml
Prince Charitable Trusts	Environment	Non-profit organizations	Protect and enhance open spaces in the city of Chicago	Approx. $300,000 total in 2002 environmental grants	fdncenter.org/grantmaker/prince/environment.html
Kraft Foods	Environment	Non-profit organizations	A limited number of small grants are provided annually to organizations in the areas of conservation and the environment.	$5,000 and Up	www.kraft.com/cares.html

Oct. 06

Department of Planning and Development
Building Green/Green Roof Matrix

Department of Planning and Development
Lori T. Healey, Commissioner

Project Type	Public Assistance		No Public Assistance
	(RFP/Negotiated Sale w/Land Write Down) (Empowerment Zone Grants) (TIF) (DOH)	(Industrial Dev. Rev. Bonds) (Enterprise Zone Fac. Bonds) (Bank Participation Loans) (Class L) (SBIF) (Class 6b)	(Planned Developments) (Lakefront Protection Ordinance Developments)
Residential			
Market Rate SF, TH, Multi-units (< 4 units)	Energy Star Certification or LEED Certified Building		
4 or more Townhomes (TH)***	50% Green Roof + Energy Star Certification or LEED Certified Building*	50% Green Roof + Energy Star Certification*	25% Green Roof*
4 or more Market Rate Units	50% Green Roof + Energy Star Certification or LEED Certified Building*	50% Green Roof + Energy Star Certification*	25% Green Roof*
> 20% Affordable Units or CPAN	DOH Green Criteria		
Institutional			
Hospitals	50% Green Roof or 25% Green Roof + LEED Certified Building*	25% Green Roof or 10% Green Roof + LEED Certified Building*	25% Green Roof or 10% Green Roof + LEED Certified Building*
Community Centers and Schools**			25% Green Roof or 10% Green Roof + LEED Certified Building*
Industrial	10% Green Roof or Energy Star Roof + LEED Certified Building*	10% Green Roof or Energy Star Roof*	
Commercial			
Retail over 10,000 square feet (footprint)	75% Green Roof or 50% Green Roof + LEED Certified Building*	50% Green Roof or 25% Green Roof + LEED Certified Building*	50% Green Roof*
Retail under 10,000 square feet (footprint)	25% Green Roof or LEED Certified Building*	Energy Star Roof	Energy Star Roof
Office over 80 feet	100% Green Roof	75% Green Roof*	50% Green Roof*
Office under 80 feet	50% Green Roof or Energy Star Roof + LEED Certified Building*	Energy Star Roof	

NOTE: All projects being reviewed by the Department of Planning and Development are encouraged to use storm water best management practices, LEED and Energy Star building standards and residential green building standards where applicable.

A 50% green roof and LEED certification will be required for all public projects except Community Centers and Schools. LEED certification plus a 10% green roof or a 25% green roof will be required for Public Community Centers and Schools. Community Centers and Schools will also focus on indoor air quality and daylighting.

* The area of green roof coverage will be based on the net area of the roof, which is defined as the usable space of the roof including pathways. Remainder of roof must meet Energy Star level for reflectivity.
** Church buildings serving multiple purposes will be considered a community center.
***Townhomes with common and contiguous roof space without private access to roofs. Emergency access routes do not apply.

Legend:
SF = Single Family
TH = Townhomes
RFP = Request for Proposals
TIF = Tax Increment Financing
SBIF = Small Business Improvement Fund
DOH = Department of Housing
CPAN = Chicago Partnership for Affordable Neighborhoods

LEED
LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN