Cost of Green Survey of Market-Rate Housing in Seattle

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Prepared for:

City of Seattle
Department of Planning
& Development
city green building

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The City of Seattle would like to recognize the developers and architects who dedicated a significant amount of time to provide information for this study. The following organizations, along with others not publicly listed, have contributed: Vulcan Real Estate and GGLO.

Introduction

The study sought to provide a statistical analysis of the cost of incorporating sustainable elements into market rate housing through an examination of a population of projects in Seattle. The study team, however, was unable to acquire sufficient project data across a large enough population to make statistical analysis meaningful. Of the 32 projects identified and surveyed, cost data was obtained from eleven, seven seeking green certification and four not. Of the seven seeking green certification, three were seeking Built Green certification and four were seeking LEED for New Construction certification. At the time of this study, nine of the eleven projects were complete, two were in design. Narrative information was obtained for a further two projects seeking green certification.

Even though the population of data does not support rigorous statistical analysis, the data gathered contains some valuable information with regard to how sustainable elements are incorporated, and does provide broad, indicative cost data. This report includes both a tabulation of the overall construction costs for green-rated and standard market rate housing projects, and a narrative summary of the key findings arising from the interviews with the projects' participants

The construction cost analysis section of this report documents the cost of green-rated market rate housing projects and similar standard market rate housing projects. The narrative summary of interview findings looks at sustainable strategies pursued or considered by the projects and their perceived costs.

The standard projects in the study form the baseline group, and are the projects which meet minimum code requirements within the City of Seattle. It should be noted that even the base case for this study requires that projects meet certain code requirements, such as Seattle's energy code and stormwater management code that result in more environmentally responsible design that may be uncommon in the rest of the country for this type of project.

For the purposes of this analysis, green-rated projects are defined as those which meet, or are expected to meet, the requirements for either the Built Green Residential Green Building Program or certification through the United States Green Building Council's Leadership in Energy and Environmental Design for New Construction (LEED NC) Green Building Rating System. The Built Green and LEED rating systems are comprehensive in scope.

The LEED rating system requires a quantitative analysis of the sustainable elements incorporated into the building. It requires compliance with a number of prerequisites as well as additional optional credits which earn points. LEED certification is awarded upon completion of construction and is based on the documented incorporation of sustainable design elements into the design and construction of the project. All LEED projects must be third party certified.

The Built Green rating system is based on a comprehensive checklist with prerequisites and optional items which earn points. Built Green certification is also awarded upon completion of construction and is based on a statement from the project team regarding the sustainable elements incorporated into the design and construction of a project. Projects achieving 2-Star and 3-Star certification are self-certified. Projects pursuing 4-Star and 5-Star certification undergo a third party review of the building. All Built Green projects in this study have achieved, or are pursuing either a 2 star or 3-Star level.

The checklist for Built Green is included in Appendix A; the checklist for LEED NC v2.2 can be found in Appendix B.

The market rate housing projects in the study are all four to seven stories. They are all wood or steel frame over one story of concrete. All but one have parking below, and all but two have street level retail frontages. Of the nine completed projects, construction was completed between 2006 and 2009. The projects range in size from 39,000 ft.² to 166,000 ft.², with a median area of 95,600 ft.². 75% of the population fell between 80,000 ft.² and 140,000 ft.².

Key Findings

1. Among the respondents to the interviews, most indicated a belief that adding sustainable features increases the cost of projects.
2. The green-rated projects were typically pursuing strategies related to siting near existing amenities, water efficiency, energy conservation, use of recycled materials, and reduction of VOC content for finish materials.
3. There is a high level of reluctance on the part of market rate housing developers to disclose cost data.
4. While it is not possible to draw statistical inferences from the data, due to the very low population size, it is clear that there are, as in previous studies of populations, both low cost and high cost green-rated and standard buildings. The sustainable features do not appear to be a major driving factor in the overall cost.

Cost Comparison

Methodology

For this study we compared reported construction (hard) costs and project costs for populations of affordable housing projects in the city of Seattle. The initial study identified 32 suitable projects for analysis. Of these, interviews were completed for 13, and construction and project cost data obtained for 11 of the projects.

All costs were normalized for time, and for the purposes of this report are stated as of June 2011. Since all projects are in Seattle, there is no need for a location adjustment. It should be noted that, given the relatively small time span the overall time adjustments were relatively small.

The study compared the project costs and construction costs for the green-rated and standard buildings on a cost per square foot basis. The costs and areas used in the study were obtained from interviews with representatives of the project teams. It was not possible to audit or validate the building data, and all data was used without verification or adjustment, other than normalization for time. While it is possible, we do not believe that there is any built in or systematic bias in the reported data, one way or another.

The study compares only the costs between green-rated and standard buildings. Due to the relatively small population size, the study was not able to analyze the data by level of certification with any level of significance, or to subdivide the populations by building type or size.

Findings

Of the seven green-rated projects responding to the study, three were pursuing or have achieved Built Green certification, while the remaining four projects achieved or are pursuing LEED certification at the level of Certified, Silver, or Gold.

Projects in both the standard and the green-rated groups pursued and have obtained incentive funding from a variety of sources. A description of some available incentives is provided later in the Interview Findings section. The incentive monies received were not included in the comparison of costs.

Of the two measures of cost (construction cost and project cost), construction cost is generally the more reliable, having a more universal definition. The reporting of project cost is generally less uniform between projects and building owners. There is no standard definition of what costs should be included within the category of project cost, and our experience tells us that there is a significant variation in the items included under project cost. For this reason construction cost comparison provides a more reliable picture of the data sets. This is evident in the population data, where the standard deviation of the project costs is appreciably greater than the standard deviation of the construction costs.

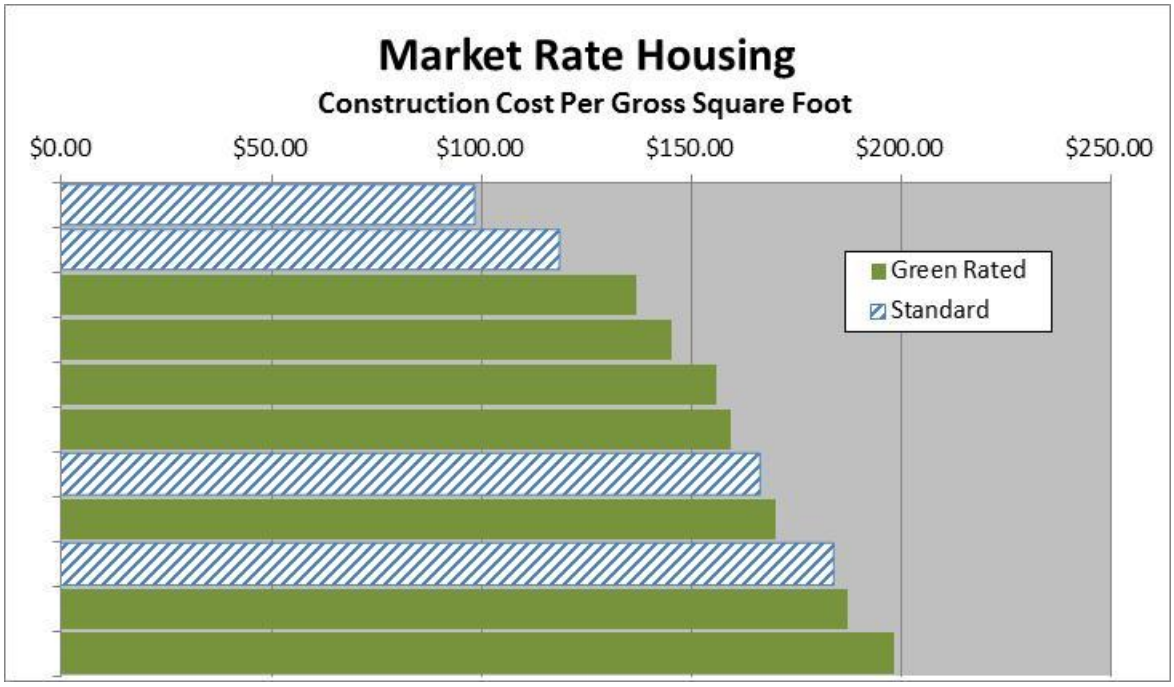
While the study team was unable to acquire sufficient project data across a large enough population to make statistical analysis meaningful, the data gathered contains some valuable information with regard to how sustainable elements are incorporated, and does provide broad, indicative cost data that green-rated market rate housing is being built within the same cost range as projects not pursuing sustainability goals.

From our review of the survey results, and our understanding of the projects and their marketing materials for prospective tenants or purchasers, there appears to be a connection between market positioning and sustainability. All of the green-rated projects in the population were marketed as such to prospective tenants or purchasers, and all were positioned within the market as more attractive or ‘up-market’. The two lower

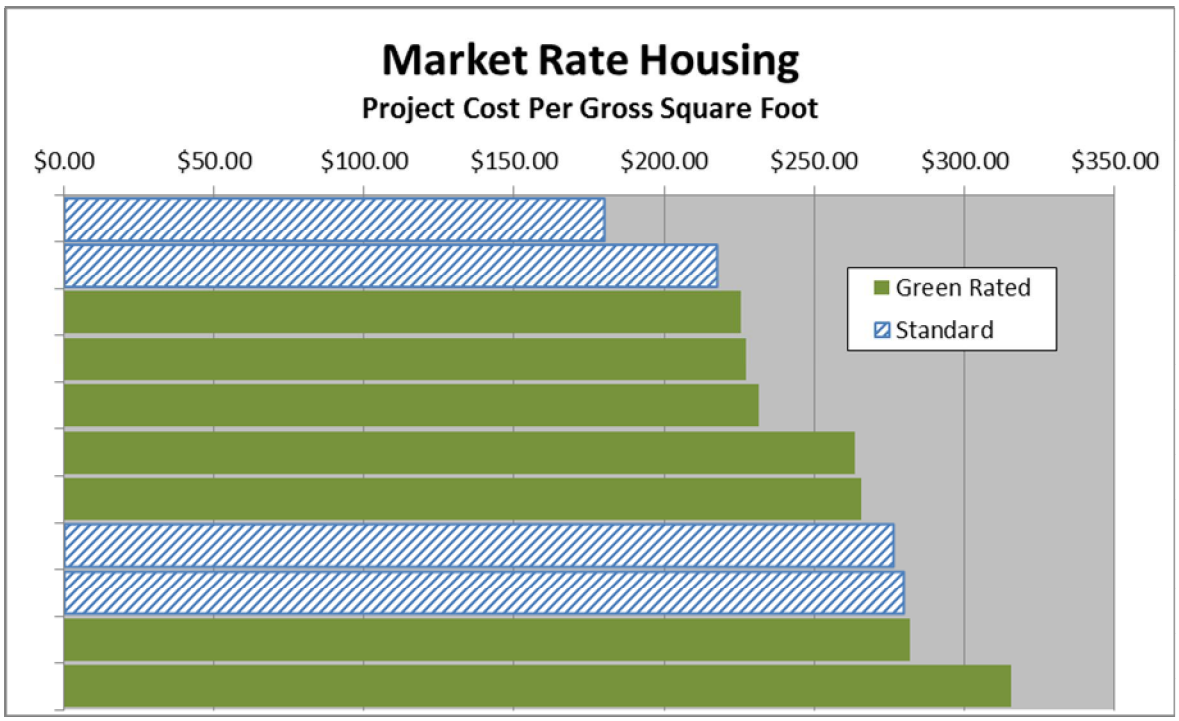
cost standard projects were not presented as such, while the two higher priced standard projects, although not pursuing sustainable goals, were. The study was not able to gather comparable rent data.

The seven green-rated and the two more expensive standard projects therefore comprise a distinct sub-group of market rate housing, designed to appeal to quality or amenity seeking tenants/purchasers. Within this population, it would appear from the cost data, and from our earlier evaluations of the cost of incorporating sustainability elements into higher market multi-family residential, buildings that the sustainability elements are not a significant cost contributor, and that they are included, in part, for market positioning.

Construction Cost



Project Cost



Interview Findings

Methodology

In project interviews, qualitative data was collected to better understand the market rate housing market's experience with green building. Interviewees were asked to discuss their experience with building green related to actual and/or perceived cost and how that impacted the selection and incorporation of sustainable design strategies. Due to the subjective nature of this portion of the research and because not all participants responded to every question, the following data analysis summarizes the most common practices and experiences.

Soft Costs

While not the focus of the study, project teams were asked a few specific questions about soft costs in order to ascertain what, if any, added cost was being incurred explicitly due to the incorporation of green elements or the pursuit of a green rating. Projects in this survey did not provide a total soft cost figure to us due to the variability of such a figure. Areas of soft cost that are typically thought of as added costs associated with green building are: sustainability consulting, commissioning, and energy modeling. Four projects reported costs associated with sustainability consulting services and/or commissioning services. Of these four, three projects listed commissioning fees, one at $15,000, one at $36,000 and one at $50,000, or $0.10, $0.26 and $1.26 per square foot. It should be noted that the project at $1.26 per square foot is not completed, and so

this is a budget number. Three projects reported sustainability consulting fees, one at $26,000, one at $36,000, and one at $60,000, or $0.17, $0.26, and $0.57 per square foot. Six projects reported fees for energy modeling. The fees ranged from $0.03 to $0.25 per square foot.

Perceived Cost

Participants were asked several questions related to cost for green features. The questions were:

- What did you do for sustainability that didn't add cost?
- What did you do for sustainability that did add cost? How did you cover the costs?
- What did you do for sustainability that saved money?
- What didn't you do for sustainability because of cost?
- What didn't you do for sustainability because it got Value Engineered out?

Of the seven green-rated projects included in the cost comparison, six answered these questions. In addition, two other green-rated projects which did not participate in the cost comparison survey answered these questions. So the responses below include responses from a total of eight green-rated projects.

All eight indicated that there were green features that added cost. Five of the eight indicated that they had incorporated items that they believed reduced cost. Five of the eight also indicated that they had incorporated features which they believed did not add cost. Seven of the eight indicated that there were additional green features they did not incorporate because of cost.

Specific responses included:

What did you do for sustainability that didn't add cost?

- Brownfield infill site
- Transit-orientation
- Maximized density and reduced parking through contract rezone
- Recycled content material
- Low VOC paint
- Operable windows (required by code)
- Low flow showers & faucets
- Limited mechanical systems
- No fireplaces
- Drought-tolerant landscaping

What did you do for sustainability that did add cost? How did you cover the costs?

- Green roof
- Added wall insulation
- Efficient windows
- Formaldehyde-free MDF
- Lawn-seal flooring
- Minimized carpet, using mostly hard-surface flooring.
- 30% water reduction
- High efficiency toilets
- Electrical outlets for recharging electric vehicles
- Enhanced commissioning
- Set up tracking tools for LEED for contractors

No respondents answered the second part of the question regarding funding of the additional cost, other than to say that the costs were incorporated into the budget.

What did you do for sustainability that saved money?

Only two respondents indicated a reduction in first cost. One for the elimination of the HVAC system, and the other for the incorporation of a zip car stall which reduced the overall amount of parking by 6 stalls.

Four indicated reductions in long term costs for reduced water and energy expenses. The specific water conservation measures that were mentioned included high efficiency irrigation and low flow fixtures. The specific energy conservation measures that were mentioned included lighting fixtures with a lower kw/ft/year.

One respondent also mentioned a net cost savings from the incorporation of a green roof.

What didn't you do for sustainability because of cost?

- Green roof
- Occupancy sensors
- Solar panels/Renewable Energy (one respondent indicated that this may be added incrementally over time, as tax credits become available).
- Distribution of stored storm water for landscape irrigation,
- Treatment and use of gray water for toilets,
- Super high-efficiency domestic hot water boilers,
- Elimination of CPVC and PVC piping,
- Commissioning.
- LEED Certification- would have added significant cost + time.

What didn't you do for sustainability because it got Value Engineered out?

- Green roof

The question of whether going green adds cost becomes a question of perceived baseline. One of the most common methods of assessing the cost of green is by comparing the cost of the green project with the original project budget, or the original anticipated cost of the project. Clearly this approach has two substantial problems: it assumes that the original budget was adequate in the first place, and it assumes that no other changes or enhancements were made; that the green features were additive, as opposed to simply incorporated into the design along with other more 'standard' features. This approach is also a concern in that projects rarely will report coming in under budget, so a range of reported costs will therefore typically run from 'no added cost' to positive. In addition, while some individual green components may be generally more expensive than their non-green counterparts, most design teams will find a way to offset these costs by reducing output in some other part of the design.

Incentives and Rebates

Several incentive programs are available for projects pursuing sustainable design and construction in Seattle. These include:

- Energy Tax Credits
- Seattle City Light's Built Smart
- PSE Gas Incentive

Eight of the projects reported pursuing incentives, including one of the standard buildings. Only one indicated the amount of the incentive, it being a $20,000 incentive from Seattle City Light's Built Smart program.

Seattle City Light's Built Smart program is a commonly utilized program for construction projects in the Seattle area. It is sponsored by the City of Seattle's public electrical utility company and provides dollar per square foot incentives for specifying energy efficiency upgrades for specific building elements such as windows, ceilings, and slabs. Built Smart requires certification after construction is complete.

Most of the respondents, when asked about incentives and rebates, did not comment extensively on any impacts the additional funding sources had on the project regarding the design or sustainability features implemented.

Key Issues

Initial costs and returns on investment are deciding factors when implementing green strategies. Project teams are often excited about green building, but the returns on investment have to pay off, usually within a 5-7 year period, in order to make it financially feasible. The main concern for many project teams was the inability to raise rent or sales prices in order to cover the costs of additional green features. While a benefit of building green is a decrease in energy usage, leading to a corresponding decrease in energy costs, these savings are more likely to benefit the tenants than the developers of the projects in this study.

Most of the green buildings in the study made sustainability a key selling point in marketing the units to prospective tenants or purchasers. The study did not seek to establish whether there was a measurable rent/sales premium associated with the sustainable features. This premium, if it exists, can be very difficult to separate out from the other factors, such as location, amenities or views which contribute to the rent/sales structure, without extensive analysis and a broader population data set. Some respondents did, however, indicate that a key reason for choosing to pursue sustainable features was as a marketing tactic, indicating a degree of expectation that these features would in some way enhance the rent/sales price or reduce vacancy.

People-oriented design is another key issue that arose during the interviews. Many respondents argued that the goal is primarily to focus on the occupants and creating healthy and livable units as opposed to using environmental sustainability as a guiding design principle.

Current Common Building Practices

In addition to Seattle's green building measures that are mandated by code and regulation, our evaluation found that there are several sustainable design measures that are typically achieved by the majority of housing projects, regardless of sustainability goals. In some cases these are by virtue of either the location or the character of the development; in others they are due to the standard practices for construction in the region. We have linked these green measures to the LEED credits that would be earned.

Project location is an important factor for those LEED credits which encourage density and building on previously developed land. Most projects in this study, because of their urban location, meet the following Sustainable Sites credits: SSc1 Site Selection, SSc2 Development Density and Community Connectivity, and SSc4.1 Alternative Transportation: Public Transportation Access. SSp1 Erosion and Sedimentation Control is also easily met in this region due to the stringency of the local codes.

Indoor Environmental Quality LEED credits, such as EQc8.2 Daylight & Views: Views for 90% of Spaces, EQc6.1 Controllability of Systems: Lighting, and EQc6.2 Controllability of Systems: Thermal Comfort, are inherently earned because the projects in this study are residential, thus most areas have glazing and tenant-controlled environments. EQp1 Minimum IAQ Performance and EAp1 Minimum Energy Performance are also typically met without difficulty due to the stringency of local codes.

Due to requirements and practices common in the Pacific Northwest, projects will achieve MRc2 Construction Waste Management: Divert 50% (and most likely 75%). In addition, MRp1 Storage and Collection of Recyclables is typically met due to the robustness of local recycling programs.
Many construction professionals in these areas are LEED Accredited Professionals and achieving IDc2 for working with a LEED AP is common.

Appendix A – Built Green Checklist

Please note that the following is the checklist only. For a copy of the full document and information about the program, please go to: http://www.builtgreen.net/

Built Green Project Checklist
Multi-Family 2008 Extended Pilot MASTER

Project Address _____

Company Name _____

Action Item Number	Possible Points	CREDITS	Total Points	Comments
TWO-STAR REQUIREMENTS (200 points minimum)				
	required	Program Orientation (one time only)	★	
	required	Section 1: Build to Program Requirements and Green Codes / Regulations	★	
	required	Achieve 30 points from each section	★	
THREE-STAR REQUIREMENTS (300 points minimum)				
	required	Meet 2-Star requirements	★	
	required	Achieve a minimum of 40 points from each section	★	
FOUR-STAR REQUIREMENTS (400 points minimum)				
	required	Meet 3-Star requirements	★	
	required	3rd party verification required	★	
Site & Water	required	Amend disturbed soil with compost to a depth of 8 to 10 inches or better than code to restore soil environmental functions (See Action Item 2-17)	★	
Site & Water	required	Landscape with plants appropriate for site topography and soil types, emphasizing use of plants with low watering requirements [drought tolerant] (See Action Item 2-44)	★	
Site & Water	required	Install ALL bathroom faucets with GPM 1.5 or better (See Action Item 2-51)	★	
Site & Water	required	Install ALL showerheads with GPM less than code (See Action Item 2-53)	★	
Energy	required	Building Modeled to have 15% better performance than energy code	★	
Energy	required	Install photovoltaic system, minimum 1 kW (See Action Item 3-80)	★	
IAQ	required	Use only low-VOC /low-toxic interior paints, primers, and finishes for large surface areas (See Action Item 4-31)	★	
IAQ	required	Provide permanently installed track-off mats and/or shoe grates at common entryways to building (See Action Item 4-79)	★	
IAQ	required	Do not install a wood-burning fireplace inside unit or building (See Action Item 4-82)	★	
Materials	required	Practice waste prevention and recycling and buy recycled products (See Action Item 5-1)	★	
Materials	required	Achieve a minimum of 70 points from each section	★	
FIVE-STAR REQUIREMENTS (600 points minimum)				
	required	Meet 4-Star requirements	★	
Site & Water	required	Preserve existing native vegetation as landscaping (See Action Item 2-8)	★	
Site & Water	required	Use pervious materials for at least one-third of total area for hardscapes (See Action Item 2-24)	★	
Energy	required	Alternate: In lieu of energy requirements demonstrate building energy performance 30% beyond code per (See Action Item 3-2)	★	
Energy	required	Install LED, Energy Star® compliant fixtures, or demonstrated energy equivalent in units and in common areas (See Action Item 3-67)	★	
IAQ	required	Use plywood and composites of exterior grade with no added urea formaldehyde (for interior use) (See Action Item 4-18)	★	
Materials	required	Achieve a minimum recycling rate of 90% of waste by weight (See Action Item 5-31 for reference)	★	
Materials	required	Use a minimum of 10 materials with recycled content per unit (See Action Items in Section 5)	★	
Materials	required	Achieve a minimum of 100 points from each section	★	
SECTION ONE: BUILD TO PROGRAM REQUIREMENTS AND GREEN CODES/REGULATIONS				
1-1	★	Provide owner with an environmentally friendly operations and maintenance kit		
1-2	★	Take extra precautions to not dispose of topsoil in lowlands or wetlands	★	
1-3	★	When construction is complete, leave no part of the disturbed site uncovered or unstabilized	★	
1-4	★	Prepare jobsite recycling plan and post on site	★	
1-5	★	If using can lights, use Energy Star® can lights or can lights approved by Washington Energy Code for all can light applications	★	
1-6	★	2-4 Star: Install CO detector for all units (hardwired preferred) with a combustion device or attached garage	★	
1-7	★	5 Star: Install CO detector for all units (hardwired required) with a combustion device	★	
1-8	★	Prohibit burying demolition and/or construction waste	★	
1-9	★	Dispose of non-recyclable hazardous waste at legally permitted facilities	★	
1-10	★	Meet all applicable state and local codes, regulations, and development standards	★	
		CODES SECTION TOTALS	**ALL**	
SECTION TWO: SITE AND WATER				
SITE PROTECTION				
Overall				
2-1	10	Build on an infill lot to take advantage of existing infrastructure and reduce development of virgin sites		
2-2	10	Build in a planned Built Green® development		
2-3	20	Build on a previously developed site (greyfield or brownfield)		
2-4	30	Create a Low Impact Development		
2-5	5-50	Meet City of Seattle's Green Factor standards		
2-6	5	For each acre of development, set aside an equal amount of land as a conservation easement or transfer the development rights		
		Subtotal	**0**	
Protect Site's Natural Features				
2-7	3	Avoid soil compaction by limiting heavy equipment use to building footprint and construction entrance		
2-8	3	Preserve existing native vegetation as landscaping		
2-9	4	Retain 30% of trees on site or retain arborist to determine tree retention plan for site		
2-10	4	Do not build on or adjacent to sensitive ecological areas: wetlands, shorelines, bluffs, old growth forests, or other critical areas		
2-11	2	If building near sensitive ecological areas, limit development footprint and preserve and protect beyond code		

2-12	5 or 7 or 10	Restore percentage of site outside the footprint for the life of the building -10% - 20% - 35%		
			Subtotal	**0**
Protect Natural Processes On-Site				
2-13	2	Install and maintain temporary erosion control devices that significantly reduce sediment discharge from the site beyond code requirements		
2-14	3	Use compost to stabilize disturbed slopes		
2-15	3	Retain all native topsoil and protect stockpiles from erosion		
2-16	3	Balance cut and fill, while minimizing change to original topography		
2-17	4	Amend disturbed soil with compost to a depth of 8 to 10 inches (or better than code) to restore soil environmental functions		
2-18	2	Replant or donate removed vegetation for immediate reuse		
2-19	2	Use plants salvaged from another site		
2-20	3	Grind land clearing wood and stumps for reuse		
2-21	3	Use a water management system that allows groundwater to recharge		
2-22	10 or 20 or 30	Manage specified percentage of stormwater and building water discharge on site by 60%, 80%, or 100%		
			Subtotal	**0**
Hardscapes				
2-23	5 or 10 or15	Design to achieve 50%, 75%, or 90% effective pervious surface outside of building footprint		
2-24	3	Use pervious materials for at least one-third of total area for hardscapes		
2-25	10 or 15 or 25	Install vegetated roof system (e.g. eco-roof) to reduce impervious surface on 25%, 50%, or 90%+ of total roof surface		
2-26	1	Integrate landscaping with parking area beyond code		
2-27	3	For an urban infill, replace impervious surfaces with permanent pervious surfaces outside building footprint		
			Subtotal	**0**
Reduce Urban Heat Island Effect				
2-28	7	Install a high albedo or light colored roof		
2-29	7	Provide shading for 30% of hardscapes by using landscape, landscape features, or overhangs		
2-30	7	For all exterior hardscape, including surface parking, use only light colored pavement for 90% of project area		
			Subtotal	**0**
Eliminate Water Pollutants				
2-31	1	Wash out concrete trucks in slab or pavement subbase areas		
2-32	1	Establish and post clean up procedures for spills to prevent illegal discharges		
2-33	1	Reduce hazardous waste through good jobsite housekeeping		
2-34	2	Construct tire wash, establish and post clean up protocol for tire wash		
2-35	2	Use slow-release organic fertilizers to establish vegetation		
2-36	2	Use less toxic form releasers		
2-37	4	Provide an infiltration system for rooftop runoff		
2-38	3	Use non-toxic or low-toxic outdoor materials for landscaping (e.g. plastic, least-toxic treated wood)		
2-39	5	No clearing or grading during wet weather periods		
2-40	25 or 50	On-site wastewater treatment for greywater only or for blackwater and greywater		
			Subtotal	**0**
WATER CONSERVATION				
Outdoor Conservation				
2-41	2	Mulch landscape beds with 2 inches organic mulch		
2-42	1	Use grass type requiring less irrigation and minimal maintenance		
2-43	5	Limit use of turf grass to 25% or less of landscaped area		
2-44	10	No turf grass		
2-45	5	Landscape with plants appropriate for site topography and soil types, emphasizing use of plants with low watering requirements (drought tolerant)		
2-46	5	Install intelligent irrigation system		
2-47	2	Install sub-surface or drip systems for irrigation with timers		
2-48	10	Install landscaping that requires no potable water for irrigation whatsoever after initial establishment period (approximately 2 years)		
2-49	1-15	Install rainwater collection system (cistern) that reduces water consumption for irrigation by 50% annually		
2-50	50	Provide 100% of building and landscaping water use with captured precipitation or reused water purified without the use of chemicals		
			Subtotal	**0**
Indoor Conservation				
2-51	3	Install ALL bathroom faucets with GPM 1.5 or better		
2-52	3	Install motion-sensor for bathroom faucets - one per unit and in all common areas		
2-53	3	Install ALL kitchen faucets with GPM less than code		
2-54	5	Install ALL showerheads with GPM less than code		
2-55	5	Stub-in plumbing to use greywater for toilet flushing		
2-56	20	Use greywater or rainwater for toilet flushing		
2-57	3	Provide water sub-metering for each unit		
2-58	8	Install high efficiency toilets in highest use area and at least one per unit in all units		
2-59	2	Install no-cartridge waterless urinals or 1/8 gallon urinals and high efficiency toilets in all common areas		
2-60	4	Install point-source, on-demand (tankless), or recirculation pump hot water systems (where appropriate)		
			Subtotal	**0**
Eliminate Water Pollutants				
2-61	3	Develop and provide a building-wide food waste disposal strategy		
2-62	1	Do not install garbage disposal		
			Subtotal	**0**
DESIGN ALTERNATIVES				
2-63	10	Follow comprehensive integrated design plan for site and structure (as described in the Handbook)		
2-64	5	Hold design charette during various stages including pre-design, schematic design, design development, and construction documents		
2-65	5	Provide community common areas accessible to all buildng occupants		
2-66	2	Take advantage of parking reduction credits that are available in your jurisdiction		
2-67	5 or 10	Provide structured parking within the proposed building footprint at a 50% minimum or 100% with no surface parking		
			Subtotal	**0**
TRANSPORTATION				
2-68	25	Create a transit-oriented development		
2-69	4	Build within ¼ mile of a transit stop or Park and Ride		
2-70	8+	Create a "mixed-use" building		

2-71	2-4	Provide subsidized bus passes		
2-72	2	Provide bicycle lockers or bicycle storage beyond code		
2-73	2	Provide bus shelters		
2-74	5+	Points for B20 biodiesel or better equipment		
2-75	5+	Provide dedicated parking spots for carpool or car-share vehicles		
2-76	1+	Provide a hardwire outlet(s) for electric vehicles		
2-77	2	Provide a link to community trails		
2-78	15	Provide alternative fueling station		
		Subtotal	**0**	
TRAINING AND EDUCATION				
2-79	2	Prepare an environmentally friendly operations and maintenance plan for common area facilities		
2-80	2	Prepare an environmentally friendly landscape operations and maintenance plan		
2-81	3	Conduct training sessions for maintenance staff and/or occupants		
2-82	5	Provide educational materials designed for the public that highlight the green building features and their performance that are included in the project		
		Subtotal	**0**	
EXTRA CREDIT / INNOVATION for Site and Water				
2-83	1-10	Extra credit / innovation for Site and Water		
		Subtotal	**0**	
		SITE & WATER SECTION TOTALS	**0**	
SECTION THREE: ENERGY EFFICIENCY				
3-1	5 or 15	Building systems commissioning beyond code		
		Subtotal	**0**	
ENVELOPE				
Thermal Performance				
3-2	10 or 20 or 30 or 40	Document envelope improvements beyond code (component performance approach) by 10%, 20%, 50%, or 75%		
3-3	2-20	Document envelope improvements beyond code minimum (prescriptive approach)		
3-4	50	Build a zero net energy building that draws zero outside power or fuel on a net annual basis		
3-5	5	Use dense packed cellulose (over 2.5 lbs/inch) or wet blown cellulose or blown in foam		
3-6	3	For concrete walls - use perimeter insulation for exterior slab edges		
3-7	6	Increase roof insulation 20% beyond code		
3-8	8	Participate in a program that provides third-party review and inspection		
		Subtotal	**0**	
Air Sealing				
3-9	3	Airtight drywall approach for framed structures		
3-10	3	Use airtight building method, such as SIP or ICF		
3-11	3	Eliminate or airtight seal all air pathways between floors and units		
3-12	5 or 10	Conduct blower door test for a sampling of units with results better than 0.30 ACH or 0.25 ACH		
		Subtotal	**0**	
Reduce Thermal Bridging				
3-13	1	Use rigid insulation as thermal break in headers		
3-14	1	Fully insulate corners at intersecting exterior walls		
3-15	1	Fully insulate at interior/exterior wall intersection by open cavity framing		
3-16	3	Use energy heels of 6 in. or more on trusses and stick frame roofs to allow added insulation over top plate		
3-17	2	Use insulated exterior sheathing		
3-18	5	Use advanced wall framing - 24-inch OC, with double top plate		
		Subtotal	**0**	
Solar Design Features				
3-19	6	Passive solar design, *basic* features installed		
3-20	12	Passive solar design, *advanced* features installed		
3-21	5	Model solar design features using approved modeling software		
3-22	2	Use landscaping plans that reduce heating/cooling loads naturally		
		Subtotal	**0**	
HEATING/COOLING				
Distribution				
3-23	1	Centrally locate heating / cooling system to reduce the size of the distribution system		
3-24	3	Install ceiling fans in all units - minimum one per unit		
3-25	2	Use advanced sealing of ducts using low-toxic mastic		
3-26	10	Third-party performance air leakage test using prescribed sampling method for each unit type meets certification		
3-27	5	Third-party duct test results less than 6% loss of floor area to outside/total flow		
3-28	2	All ducts are in conditioned space		
3-29	4	Locate heating / cooling equipment inside the conditioned space		
		Subtotal	**0**	
Controls				
3-30	1	Install thermostat with on-switch for furnace fan to circulate air		
3-31	1	Install thermostat with one degree dead-band (electronic or vapor diaphragm) for non-ducted electric heat		
3-32	2	Install 60-minute timers or humidistat for bathroom and laundry room fans		
3-33	2	Install programmable thermostats		
3-34	1	Provide separate switching for bathrooms fan/heat lamp and fan/light combination fixtures		
3-35	3	Provide electricity and/or natural gas direct metering for each unit		
3-36	5	Install heat systems with separate zones for sleeping and living areas (not including electric resistance heating)		
		Subtotal	**0**	
Heat Recovery				
3-37	7	Install a heat recovery ventilator or an energy recovery ventilator		
		Subtotal	**0**	
Equipment				
3-38	3	Select high efficiency heat pumps		
3-39	3	Select Energy Star® heating / cooling equipment or equivalent		
3-40	2	No gas fireplaces, or use direct vent gas or propane hearth product (AFUE rating)		
3-41	7	No air conditioner		
3-42	5	Direct use of natural gas, i.e., centralized boiler with hydronic heating system units <u>or</u> units with fan coil system that can do both heating and cooling		

3-43	10 or15	Install whole building hydronic heating for heating in all units, point range based on boiler efficiency - 85% or 92%		
3-44	10	Install geothermal heat pumps		
		Subtotal	**0**	
WATER HEATING				
Overall				
3-45	5	Install drainwater heat recovery system (DHR)		
3-46	2	Install whole building recirculation pump		
3-47	2	Passive or on-demand hot water delivery system installed at farthest location from water heater		
3-48	2	Install on-demand (tankless) hot water heater		
3-49	3	Upgrade electric water efficiency above code		
3-50	2 or 4	Upgrade gas or propane water heater efficiency to 0.61 or 0.81		
3-51	2	Install the water heater inside the heated space (electric, direct vent, or sealed venting only)		
3-52	4	Upgrade electric water heater to an exhaust air heat pump water heater or de-superheater: EF 1.9		
3-53	3	Install a timer to regulate standby hot water loss in hot water heater		
3-54	3	Ultra high efficiency central water heating		
3-55	5	Solar water heating system for common facilities		
3-56	5	Install Solar Hot Water Heating		
		Subtotal	**0**	
Distribution				
3-57	2	Locate water heater within 20 pipe feet of highest use		
3-58	1	Insulate all hot water pipes and install cold inlet heat traps on hot water heater		
		Subtotal	**0**	
LIGHTING				
Natural Light				
3-59	1	Light-colored interior finishes		
3-60	2	Use clerestory for natural lighting		
3-61	**5**	Maximize daylighting for all units		
		Subtotal	**0**	
Efficient Lighting				
3-62	2	Install low-mercury T-8 lamps		
3-63	1	Halogen lighting substitited for incandescent downlights		
3-64	3	Install lighting dimmer, photo cells, timers, and/or motion detectors (interior) for high efficiency fixtures		
3-65	2	Install photo cells, timers, motion detectors (exterior) for 90% of fixtures		
3-66	3-5	Install LED or Energy Star® compliant CFL bulbs or demonstrated energy equivalent in all units and common areas.		
3-67	1-10	Install LED, Energy Star® compliant fixtures, or demonstrated energy equivalent in all units and common areas		
3-68	5	Avoid excessive outdoor light levels while maintaining adequate light for security and safe access, meet IESNA Levels		
		Subtotal	**0**	
APPLIANCES				
3-69	4	Install gas clothes dryer in common laundry or in all units		
3-70	2	Install a water-saving, energy-efficient washing machine in all units		
3-71	5	Install common laundry facilities instead of in each unit with water-saving, energy-efficient washers		
3-72	1	Install a water-saving, energy-efficient dishwasher in all units		
3-73	2	Install Energy Star® refrigerator in all units		
3-74	2	Install gas stove/cooktop in all units		
3-75	2	Install biofuel appliances		
3-76	2	Install Energy Star® exhaust fans in all units		
		Subtotal	**0**	
ALTERNATIVE ENERGY BONUS POINTS				
3-77	2-5	Participate in the local utility's electricity program for renewable electricity sources		
3-78	1	Solar-powered or low-voltage walkway or outdoor area lighting		
3-79	10	More than 2% of building powered by photovoltaic		
3-80	5-25	Install photovoltaic system, minimum 1 kW		
3-81	5 or 10 or 25	Install innovative non-solar renewable power systems that produce a minimum of 15%, 30%, or 50% of the common area's total annual energy		
		Subtotal	**0**	
EXTRA CREDIT / INNOVATION for Energy Efficiency				
3-82	1--10	Extra credit / innovation for Energy Efficiency		
		Subtotal	**0**	
		ENERGY EFFICIENCY SECTION TOTALS	**0**	
SECTION 4: HEALTH AND INDOOR AIR QUALITY				
OVERALL				
4-1	5	Builder or architect certified to have taken American Lung Association (ALA) of Washington "Healthy House Professional Training" course, or equivalent approved by Director		
4-2	15	Certify building under an IAQ program approved by Director		
4-3	5	Building is designated non-smoking		
4-4	2	Provide tenants or homeowners with maintenance checklists		
		Subtotal	**0**	
JOBSITE OPERATIONS				
4-5	1	Use less-toxic cleaners		
4-6	1	Require workers to use VOC-safe masks when applying VOC containing wet products and N-95 dust masks when generating dust		
4-7	3 or 5	Take measures during construction operations to avoid moisture problems later (see Handbook for Basic or Expanded levels)		
4-8	2	Take measures to avoid problems due to construction dust by performing all items listed in the handbook		
4-9	3	Ventilate during all new wet finish applications		
4-10	2	No use of unvented heaters during construction		
4-11	3	Clean duct and furnace thoroughly before occupany		
4-12	2	Train subs in implementing a healthy building jobsite plan for the project		
4-13	2	Cover all duct openings during construction		
		Subtotal	**0**	
LAYOUT AND MATERIAL SELECTION				
4-14		Inside the building envelope use only low-VOC, low-toxic, water-based, solvent-free sealers, grouts, mortars, drywall mud, caulks, and adhesives for:		

4-14a	2	Tiling		
4-14b	2	Framing		
4-14c	4	Flooring		
4-14d	2	Plumbing		
4-14e	2	HVAC		
4-14f	2	Insulating		
4-14g	2	Drywalling		
4-15	5	Use an alternatiave to fiberglass insulation		
4-16	3	Use urea formaldehyde-free insulation or Greenguard certified product		
4-17	1	Do not install insulation or carpet padding that contains brominated flame retardant		
4-18	3	Use plywood and composites of exterior grade with no added urea formaldehyde (for interior use)		
4-19	5	Use only shelving, window trim, door trim, base molding, etc., with no added urea formaldehyde		
4-20	5	Install cabinets made with board with no added urea formaldehyde and low-toxic finish		
4-21	1	Use pre-finished flooring		
4-22	3	Use ceramic tile flooring		
4-23	18	Bonus Points: No carpet in units		
4-24	3	Limit use of carpet to one-third of unit's square footage		
4-25	2	If installing carpet system (carpet, pad, and adhesive), specify CRI Green Label Plus or Greenguard		
4-26	3	If using carpet, install by dry method		
4-27	2	Install low pile or less allergen-attracting carpet and pad		
4-28	2	Install natural fiber carpet		
4-29	2	Avoid carpet in environments where it can get wet		
4-30	2 or 6	Optimize air quality in family bedrooms to basic or advanced level by completing items listed in handbook		
4-31	5	Use only low-VOC / low-toxic interior paints, primers, and finishes for large surface areas		
4-32	7	Use only low-VOC / low toxic interior paints and finishes for all surface areas (including doors, windows, trim)		
4-33	30	Select materials such that the building is free from the following materials/chemicals: added formaldehyde, halogenated flame retardants, PVC, mercury, CFCs, HCFCs, neoprene (chloroprene), cadmium, chlorinated polyethelene, xylene, tolulene		
		Subtotal	**0**	
MOISTURE CONTROL				
Overall				
4-34	4	Use Building Envelope Consultant during design		
4-35	1	Grade to drain away from buildings		
4-36	4	Envelope inspection at various stages of envelope installation by a qualified professional		
Roof				
4-37	6	Provide 50% minimum 2 inch 12 pitch sloped roof surface		
4-38	10	Provide 100% minimum 2 inch 12 pitch sloped roof surface		
Walls - Above Grade				
4-39	3	Provide continuous weather resistive barrier and continuous air seal barrier with manufacturer's recommended termination (seal or tape)		
4-40	3	Use self-adhering membrane flashing and counter-flashing at all inside and outside corners and at exterior siding materials transitions		
4-41	6	Install an enhanced drainage plane with an air space to allow ventilation between the weather barrier and cladding and include weep control system		
4-42	3 or 7	Use moisture test to ensure that wood framing contains less than 15% moisture content prior to installation of any interior finish		
4-43	3	In wood-framed structures, use low-toxic mold-inhibitor product		
Below Grade				
4-44	3	For slab on grade, use 10 mil polyethylene vapor barrier or equivalent performance, under slab		
4-45	2	Perform moisture test for any slab on grade prior to installing any finish to manufacturer's specifications		
4-46	2	Install working mechanical vent system to eliminate potential moisture, methane, and radon problems in crawl space or under slabs on grade		
4-47	1	Install a rigid perforated footing drain at foundation perimeter, not connected to roof drain system		
4-48	3	Install moisture management system for below grade walls beyond code, i.e., drainage mat		
Openings				
4-49	3	Provide appropriately sized overhangs at 25% of openings		
4-50	6	Provide appropriately sized overhangs on 100% south and/or west side openings		
4-51	1	Properly seal building openings and penetrations against moisture and air leaks as specified in handbook		
4-52		Install additonal moisture control measures:		
4-52a	1	sill pans with back dams at windows		
4-52b	7	door pans with back dams at doors		
4-52c	3	sill protection at windows		
4-52d	3	threshold protection at doors		
4-52e	1	metal head flashing at windows		
4-52f	1	metal head flashing at doors		
4-53	3	Provide hose testing or negative pressurization testing to pre-installed sample of each window type to test assembly for moisture control protection		
		Subtotal	**0**	
AIR DISTRIBUTION AND FILTRATION				
4-54	1	Provide ideal relative humidity and air circulation to prevent IAQ problems		
4-55	1	Ensure ceiling plenums contain no hazardous/unhealthy materials		
4-56	2	No stud or joist cavities used as plenums		
4-57	2	Do not install electronic, metal mesh, horse hair, or non-pleated fiberglass filters		
4-58	1	Make sure air intakes are placed to avoid intake from air pollutant sources that go beyond code		
4-59	1	No parking within 40 feet of building air intakes		
4-60		Use effective air filter:		
4-60a	1	Use medium efficiency pleated filter, MERV 10		
4-60b	5	Use high efficiency pleated filter, MERV 12 or better, or HEPA		
4-61	2	Install operable windows in all occupied spaces to allow for cross ventilation and daylighting		
4-62		Install CO detector (hardwired) for all units with a combustion device		
4-63	3	Separately ventilate all janitorial spaces, copy rooms, and chemical storage areas		
4-64	2	Install CO_2 detectors in community rooms		
		Subtotal	**0**	
HVAC EQUIPMENT				
4-65	1	Design to ensure accessibility of all system components		

4-66	1	Design to prevent standing water in HVAC system		
4-67	1	Flow test all spot ventilation fans in units		
4-68	1	Use heating system controls that are free of mercury		
4-69	1	Limit kitchen exhaust fan to 300 cfm maximum		
4-70	1	Install a 60-minute timer or humidistat for bath exhaust fans		
4-71	2	Install quiet (≤0.8 sone) bath fan with smooth ducting, minimum 4 inch		
4-72	1	Reduced or zero use of ozone-depleting compounds in refrigeration and fire suppression systems		
4-73	1	No sound insulation or other fibrous materials installed inside ducting		
4-74	3	Install sealed combustion heating and hot water equipment		
		Subtotal	**0**	
HEALTH AND INDOOR AIR QUALITY				
4-75	1	Build a lockable storage closet for hazardous cleaning and maintenance products, separate from occupied space		
4-76	1	Install biodegradable carbon filter at sink		
4-77	3	Install showerhead filter in all units, include information in the tenent handbook		
4-78	3	Provide permanently installed track-off mats and/or shoe grates at common entryways to building		
4-79	2	Provide track-off mats at exterior unit main entrances to each unit and a shoe storage area		
4-80	3	Design a shoe removal vestibule at major entrances to units		
4-81	3	Do not install a wood-burning fireplace inside unit or building		
4-82	1	Do not install gas-burning appliances inside unit or building		
4-83	1	Install floor drain or catch basin with drain under washing machine		
		Subtotal	**0**	
EXTRA CREDIT / INNOVATION for Health and Indoor Air Quality				
4-84	1-10	Extra credit / innovation for Health and Indoor Air Quality		
		Subtotal	**0**	
		HEALTH AND INDOOR AIR QUALITY SECTION TOTALS	**0**	
SECTION FIVE: MATERIALS EFFICIENCY				
OVERALL				
5-1	10	Practice waste prevention and recycling and buy recycled products		
5-2	5 or 7 or 9	Design and build for deconstruction concept - 50%, 75%, or 90%		
5-3	1-5	Eliminate materials and systems that require finishes or finish materials on a minimum of 100 square feet in common areas- 1 pt per 100 sf - 5 pts max		
		Subtotal	**0**	
JOBSITE OPERATIONS				
5-4	3	Provide weather protection for stored materials		
5-5	1	Substitute products that require solvent-based cleaning methods with solvent-free or water-based methods		
5-6	5	Purchase a one-time carbon offset to account for construction carbon footprint		
		Subtotal	**0**	
Reduce				
5-7	2	Create detailed take-off and provide as cut list to framer		
5-8	2	Use central cutting area or cut packs		
5-9	3	Require subcontractors and contractor's employees to participate in waste reduction efforts		
		Subtotal	**0**	
Reuse				
5-10	2 or 10 or 20	Use deconstruction to dismantle and reuse existing building(s) on site		
5-11	1	Sell or give away wood scraps, lumber and land clearing debris		
5-12	1	Donate, give away, or sell reusable finish items		
5-13		Re-use materials:		
5-13a	1	doors		
5-13b	1	flooring		
5-13c	1	windows		
5-13d	1	appliances		
5-13e	1	fixtures		
5-13f	1	hardware		
5-13g	1	cabinets		
5-13h	1	siding		
5-13i	1	decking		
5-13j	1	trim		
5-13k	2	framing lumber		
5-14	1-10	Bonus points for reuse of salvaged materials		
		Subtotal	**0**	
Recycle				
Source Separation Recycling				
5-15	1	Recycle cardboard by source separation, 90% minimum recycling rate		
5-16	2	Recycle metal scraps by source separation, 90% minimum recycling rate		
5-17	5	Recycle clean scrap wood and broken pallets by source separation, 90% minimum recycling rate		
5-18	2	Recycle package wrap and pallet wrap by source separation, 90% minimum recycling rate		
5-19	3	Recycle drywall by source separation, 90% minimum recycling rate		
5-20	2	Recycle concrete/asphalt rubble, masonry materials, or porcelain by source separation, 90% minimum recycling rate		
5-21	1	Recycle paint by source separation, 90% minimum recycling rate		
5-22	4	Recycle asphalt roofing by source separation, 90% minimum recycling rate		
5-23	2	Recycle carpet padding by source separation, 90% minimum recycling rate		
5-24	2	Recycle carpet by source separation, 90% minimum recycling rate		
5-25	1	Recycle glass by source separation, 90% minimum recycling rate		
5-26	3	Recycle land clearing and yard waste, soil and sod by source separation, 90% minimum recycling rate		
5-27	1	Recycle batteries		
5-28	4	Commingle recycle at least 50% of remaining jobsite debris, and take to a facility with a minimum recycling rate of 50%		
		Subtotal	**0**	
Commingle Recycling				
5-29	5 or 10	Send less than 1lb per square foot of gross construction waste to land fill, or less than ½ lb per square foot to land fill (does not include deconstruction)		
5-30	10	Send at least 85% of jobsite waste (by weight excluding concrete) to a commingled recycling facility with 50% recycling rate		

5-31	18	Send at least 85% of jobsite waste (by weight excluding concrete) to a commingled recycling facility with 75% recycling rate		
5-32	24	Send at least 85% of jobsite waste (by weight excluding concrete) to a commingled recycling facility with 90% recycling rate		
			Subtotal	**0**
DESIGN AND MATERIAL SELECTION				
Overall				
5-33	1	Use standard dimensions in design of structure		
5-34	10	Design and install recycling stations on each floor, including a maintenance service plan		
5-35	1	Install materials with longer life cycles		
5-36	1	Install locally/regionally produced materials		
5-37	10	Install locally/regionally produced materials, minimum 5 materials used in all units		
5-38	5	Use salvaged lumber, minimum of 1,000 board feet		
5-39	1	Use any amount of rapidly renewable building materials and products made from plants harvested within a ten-year cycle or shorter		
5-40	3	In three applications, use rapidly renewable building materials and products made from plants harvested within a ten-year cycle or shorter		
5-41	3	Use no endangered wood species		
5-42	2	Use environmentally preferable products with third-party certifications		
5-43	3	Use no PVC or CPVC piping for plumbing or sprinkler within the building envelope		
			Subtotal	**0**
Framing				
5-44	10	Use dimensional lumber that is third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-45	6	Use dimensional lumber that is third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook, 50% minimum		
5-46	7	Use sheathing that is third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-47	4	Use sheathing that is third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook, 50% minimum		
5-48	5	Use beams that are third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-49	3	Use beams that are third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook, 50% minimum		
5-50	3	Use factory framed wall panels (panelized wall construction)		
5-51	3	Use engineered structural products and use no 2xs larger than 2x8, and no 4xs larger than 4x8		
5-52	1	For interior walls, use steel studs with minimum 50% recycled content		
5-53	4	Use structural insulated panels (SIPs)		
5-54	2	Use insulated concrete forms (ICFs)		
5-55	1	Use finger-jointed framing material (e.g. studs)		
5-56	5	Use advanced system framing with double top plate		
			Subtotal	**0**
Foundation				
5-57	1 or 3	Use at least 90% regionally or locally produced block		
5-58	3 or 6	Use regionally produced flyash or blast furnace slag for 25% by weight of cementitious materials for all concrete (20% for flat work), if available		
5-59	2	Use recycled concrete, asphalt, or glass cullet for base or fill		
			Subtotal	**0**
Sub-Floor				
5-60	1	Use recycled content sub-floor		
			Subtotal	**0**
Doors				
5-61	2	Use domestically-grown wood interior doors		
			Subtotal	**0**
Finish Floor				
5-62	1	If using vinyl flooring, use product with recycled content		
5-63	4	No vinyl flooring		
5-64	1	Use any amount of rapidly renewable flooring products made from plants harvested within a ten-year cycle or shorter (excluding carpet)		
5-65	3	On more than 250 square feet per unit, use rapidly renewable flooring products made from plants harvested within a ten-year cycle or shorter (excluding carpet)		
5-66	1	Use recycled content carpet pad		
5-67	1	Use recycled content or renewed carpet		
5-68	2 or 4	Use replaceable carpet tile for 50% of carpeted area or 100% of carpeted area		
5-69	5	If using tile, use 75% of tile that is 40% recycled content		
5-70	5	Use natural linoleum		
5-71	1 or 3 or 5	If using wood flooring, use locally salvaged wood flooring on 25%, 50% or 90%+ of total flooring		
5-72	5	Use flooring that is third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-73	3	Use flooring that is third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook, 50% minimum		
5-74	1	Use spot repairable floor finish		
			Subtotal	**0**
Interior Walls				
5-75	4	Use drywall with a minimum of 90% recycled content gypsum or flue gas substitute for recycled gypsum		
5-76	2 or 3	Use recycled or “reworked” paint and finishes on main surfaces or all surfaces		
5-77	1	Use recycled newspaper or cork expansion joint filler		
5-78	2	Use natural wall finishes, like lime paint and clay		
5-79	2	Reduce interior walls through open plan for kitchen, dining and living areas		
5-80	2	Install toilet/shower partitions with recycled content		
			Subtotal	**0**
Ceilings				
5-81	1	If installing acoustical ceiling, select a recycled content product		
			Subtotal	**0**
Exterior Walls				
5-82	2	Use recycled content sheathing (OSB does not apply)		
5-83	3	Use exterior cladding with reclaimed or recycled material on at least 20% of solid wall surface		

5-84	4	No vinyl siding or exterior trim		
5-85	3	Use salvaged masonry brick or block, 50% minimum		
5-86	2	Use regionally produced stone or brick		
5-87	2	Use 50-year siding product		
5-88	5	Use wood siding that is third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook on at least 20% of solid wall surface		
5-89	3	Use wood siding that is third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook on at least 20% of solid wall surface		
		Subtotal	**0**	
Windows				
5-90	3	Use wood, composite, or fiberglass windows		
5-91	4	No vinyl windows		
5-92	1	Use finger-jointed wood windows		
5-93	2	Use regionally produced windows		
		Subtotal	**0**	
Trim				
		If using wood trim:		
5-94a	1	Use regional products, 50% minimum		
5-94b	3	Use domestic hardwood trim that is third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-94c	2	Use domestic hardwood trim that is third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook, 50% minimum		
5-94d	3	Use third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-94e	2	Use third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook, 50% minimum		
5-95	3	Use finger-jointed or MDF trim with no added urea formaldehyde, 90% minimum		
5-96	1	Use wood veneers that are third-party certified sustainably harvested woods that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-97	1	Use wood veneers that are third-party certified sustainably harvested woods that meets the Tier 2 requirements outlined in the Handbook, 75% minimum		
		Subtotal	**0**	
Cabinetry				
5-98		For cabinets:		
5-98a	2	Use regional products, 90% minimum		
5-98b	2	Use domestic hardwood that is third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-98c	1	Use domestic hardwood that is third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook, 50% minimum		
5-98d	2	Use third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook, 50% minimum		
5-98e	1	Use third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook, 50% minimum		
5-98f	2 or 3	Use cabinet casework and shelving constructed of agricultural fiber (“strawboard” or “wheatboard”) with no added urea formaldehyde for 50% or 90% of all casework		
5-99	1	Use resource efficient countertop material in lobby/reception areas		
5-100	4	Use countertops that are salvaged, recycled, or third-party certified sustainably harvested wood with a chain of custody in all units		
		Subtotal	**0**	
Roof				
5-101	2	Use recycled content roofing material		
5-102	3	Upgrade material quality and durability (metal is better than torch down)		
5-103	2	Use 30-year warranted roofing material		
5-104	4	Use 40-year warranted roofing material		
5-105	6	Use 50-year warranted roofing material		
5-106	7	Use solar shingles		
5-107	3	Install a metal roof		
		Subtotal	**0**	
Insulation				
5-108	2	All insulation to have a minimum of 40% recycled content		
5-109	3	Use environmentally friendly foam building products (formaldehyde-free, CFC-free, HCFC-free)		
5-110	3	Use backer rod around windows for infiltration sealing		
		Subtotal	**0**	
Other Exterior				
5-111	2	Use reclaimed or salvaged material for landscaping walls		
5-112	3	Use 100% recycled content HDPE, salvaged lumber, or lumber that is third-party certified sustainably harvested wood that meets the Tier 1 requirements outlined in the Handbook for decking and porches		
5-113	2	Use 100% recycled content HDPE, salvaged lumber, or lumber that is third-party certified sustainably harvested wood that meets the Tier 2 requirements outlined in the Handbook for decking and porches		
5-114	2	Use recycled content lumber for decking (e.g., Trex)		
5-115	4	If lumber is used, use no pressure treated lumber		
5-116	1	If using pressure-treated lumber, use CAB		
		Subtotal	**0**	
EXTRA CREDIT / INNOVATION for Materials Efficiency				
5-117	1-10	Extra credit / innovation for Materials Efficiency		
		Subtotal	**0**	
		MATERIALS EFFICIENCY SECTION TOTALS	**0**	
		PROJECT SCORING TOTAL	**0**	

	PROJECT SUMMARIES	
One	PROGRAM REQUIREMENTS AND CODES / REGULATIONS	X
Two	SITE & WATER SECTION TOTALS	0
Three	ENERGY EFFICIENCY SECTION TOTALS	0
Four	HEALTH & INDOOR AIR QUALITY SECTION TOTALS	0
Five	MATERIAL EFFICIENCY SECTION TOTALS	0

_____**Total Points for Project**

Program Level Obtained

☐ 2-Star ★★ ☐ 3-Star ★★★

☐ 4-Star ★★★★ ☐ 5-Star ★★★★★

By my signature, I certify that I have performed all Action Items checked above.

X_____

(Home Builder Signature and Date)

Appendix B – LEED NCv2.2 Checklist

Please note that the following is the checklist only. For a copy of the full document and information about the program, please go to: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=220

LEED for New Construction v 2.2
Registered Project Checklist

Project Name: _____

Project Address: _____

Yes	?	No		
			Project Totals (Pre-Certification Estimates)	69 Points
			Certified: 26-32 points **Silver**: 33-38 points **Gold**: 39-51 points **Platinum**: 52-69 points	

Yes	?	No			
			Sustainable Sites		14 Points
Yes			Prereq 1	**Construction Activity Pollution Prevention**	Required
			Credit 1	**Site Selection**	1
			Credit 2	**Development Density & Community Connectivity**	1
			Credit 3	**Brownfield Redevelopment**	1
			Credit 4.1	**Alternative Transportation**, Public Transportation	1
			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
			Credit 4.3	**Alternative Transportation**, Low-Emitting & Fuel Efficient Vehicles	1
			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
			Credit 5.1	**Site Development**, Protect or Restore Habitat	1
			Credit 5.2	**Site Development**, Maximize Open Space	1
			Credit 6.1	**Stormwater Design**, Quantity Control	1
			Credit 6.2	**Stormwater Design**, Quality Control	1
			Credit 7.1	**Heat Island Effect**, Non-Roof	1
			Credit 7.2	**Heat Island Effect**, Roof	1
			Credit 8	**Light Pollution Reduction**	1

Yes	?	No			
			Water Efficiency		5 Points
			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
			Credit 2	**Innovative Wastewater Technologies**	1
			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

LEED for New Construction v 2.2
Registered Project Checklist

Yes	?	No			
			Energy & Atmosphere		**17 Points**
Yes			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
Yes			Prereq 1	**Minimum Energy Performance**	Required
Yes			Prereq 1	**Fundamental Refrigerant Management**	Required

***Note for EAc1:** All LEED for New Construction projects registered after June 26, 2007 are required to achieve at least two (2) points.

			Credit 1	**Optimize Energy Performance**	1 to 10
			Credit 1.1	10.5% New Buildings / 3.5% Existing Building Renovations	1
			Credit 1.2	14% New Buildings / 7% Existing Building Renovations	2
			Credit 1.3	17.5% New Buildings / 10.5% Existing Building Renovations	3
			Credit 1.4	21% New Buildings / 14% Existing Building Renovations	4
			Credit 1.5	24.5% New Buildings / 17.5% Existing Building Renovations	5
			Credit 1.6	28% New Buildings / 21% Existing Building Renovations	6
			Credit 1.7	31.5% New Buildings / 24.5% Existing Building Renovations	7
			Credit 1.8	35% New Buildings / 28% Existing Building Renovations	8
			Credit 1.9	38.5% New Buildings / 31.5% Existing Building Renovations	9
			Credit 1.10	42% New Buildings / 35% Existing Building Renovations	10
			Credit 2	**On-Site Renewable Energy**	1 to 3
			Credit 2.1	2.5% Renewable Energy	1
			Credit 2.2	7.5% Renewable Energy	2
			Credit 2.3	12.5% Renewable Energy	3
			Credit 3	**Enhanced Commissioning**	1
			Credit 4	**Enhanced Refrigerant Management**	1
			Credit 5	**Measurement & Verification**	1
			Credit 6	**Green Power**	1

LEED for New Construction v 2.2
Registered Project Checklist

Yes	?	No			
			Materials & Resources		**13 Points**
Yes			Prereq 1	**Storage & Collection of Recyclables**	Required
			Credit 1.1	**Building Reuse,** Maintain 75% of Existing Walls, Floors & Roof	1
			Credit 1.2	**Building Reuse,** Maintain 95% of Existing Walls, Floors & Roof	1
			Credit 1.3	**Building Reuse,** Maintain 50% of Interior Non-Structural Elements	1
			Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
			Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
			Credit 3.1	**Materials Reuse**, 5%	1
			Credit 3.2	**Materials Reuse**, 10%	1
			Credit 4.1	**Recycled Content**, 10% (post-consumer + 1/2 pre-consumer)	1
			Credit 4.2	**Recycled Content**, 20% (post-consumer + 1/2 pre-consumer)	1
			Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured	1
			Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured	1
			Credit 6	**Rapidly Renewable Materials**	1
			Credit 7	**Certified Wood**	1

Yes	?	No			
			Indoor Environmental Quality		**15 Points**
Yes			Prereq 1	**Minimum IAQ Performance**	Required
Yes			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
			Credit 1	**Outdoor Air Delivery Monitoring**	1
			Credit 2	**Increased Ventilation**	1
			Credit 3.1	**Construction IAQ Management Plan,** During Construction	1
			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
			Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
			Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
			Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
			Credit 6.1	**Controllability of Systems**, Lighting	1
			Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
			Credit 7.1	**Thermal Comfort,** Design	1
			Credit 7.2	**Thermal Comfort,** Verification	1
			Credit 8.1	**Daylight & Views,** Daylight 75% of Spaces	1
			Credit 8.2	**Daylight & Views,** Views for 90% of Spaces	1

LEED for New Construction v 2.2
Registered Project Checklist

Yes	?	No			
			Innovation & Design Process		**5 Points**
			Credit 1.1	**Innovation in Design:** Provide Specific Title	1
			Credit 1.2	**Innovation in Design:** Provide Specific Title	1
			Credit 1.3	**Innovation in Design:** Provide Specific Title	1
			Credit 1.4	**Innovation in Design:** Provide Specific Title	1
			Credit 2	**LEED® Accredited Professional**	1

Appendix C – Questionnaire

Davis Langdon
An AECOM Company

Cost of Green Survey of Market Rate Housing in Seattle Questionnaire

1. What was / will be construction start date & end date?
2. Total GSF of Project:
3. Is there Parking?
    a. SF of Parking?
    b. Is this area included in the GSF above?
4. Is there retail?
    a. SF of retail?
    b. Is this area included in the GSF above?
5. What is the overall project cost, or budget if project not yet complete?
6. What is the hard construction cost, or budget if project not yet complete?
7. What are the Soft Costs?
    a. Was Commissioning done?
        i. To what level?
        ii. What were costs associated with Cx?
    b. Was energy modeling done?
        i. What were costs associated with the energy model?
        ii. If Yes – what % over code / ASHRAE did the project perform (please specify baseline)?
    c. Was sustainability consulting used?
        i. What were associated fees?
    d. Or, was there an added A/E fee for sustainable design work?
        i. What was the cost?
8. What did you do for sustainability that didn't add cost?
9. What did you do for sustainability that added cost, if not already addressed above?
    a. (How did you cover those costs / make it work?)
10. What did you do for sustainability that saved money, focusing on first costs, and then long term savings?
11. What *didn't* you do for sustainability because it cost more?
12. What didn't you do because it got VE'd out?
13. Was Built Smart pursued? Other incentives pursued?
    a. How much money was (or is expected) from Built Smart or other incentives?
    b. And if yes, what was done to get Built Smart/other?
14. Is this project Green rated, i.e. LEED or Built Green?
    a. If green rated,
        i. To what level rated (i.e. 3-Star, or LEED Silver)?
        ii. Why did you choose this rating level? Do you know LEED or Built Green Documentation costs?
    b. If not green rated, why not?