Council Meeting Date: January 14, 2019 **Agenda Item:** 9(a)

CITY COUNCIL AGENDA ITEM

CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Discussion of Ordinance No. 839 – Amending the Shoreline Municipal Code to Expand the Deep Green Incentive Program (DGIP)
DEPARTMENT:	Planning & Community Development
PRESENTED BY:	Miranda Redinger, AICP, Senior Planner
ACTION:	____ Ordinance ____ Resolution ____Motion __X_ Discussion ____ Public Hearing

PROBLEM/ISSUE STATEMENT:

In September 2013, Council adopted the Climate Action Plan (CAP), which committed Shoreline to reducing greenhouse gas (GHG) emissions 25% by 2020, 50% by 2030, and 80% by 2050 (below 2007 levels).

As part of the CAP's implementation Council adopted Ordinance No. 706 on March 16, 2015, which created a mandate that all new development in the Mixed-Use Residential (MUR) zones surrounding future light rail stations must achieve a 4-Star level of certification from Built Green, the green building program for the Master Builders Association of King and Snohomish Counties. On April 17, 2017, Council adopted Ordinance No. 760, which created the Deep Green Incentive Program (DGIP). The DGIP was based on Seattle's Living Building Challenge Ordinance and meant to encourage deeper levels of green building than were mandated in station subareas throughout the city.

The green building mandate in station subareas drastically increased the number of Built Green registered projects in Shoreline. There were 168 projects registered in 2018. However, the DGIP has been in place for a year-and-a-half and is just receiving its first application. Since the mandate was working much more effectively than the incentive program, Council asked staff to consider expanding the mandate to commercial zones when they adopted their 2018-2020 Priority Recommendations to implement the CAP.

City staff and the Planning Commission studied the expanding green building regulations to commercial zoning. The Planning Commission and staff recommendation has evolved to now consider expanding the green building incentive rather than the mandate.

RESOURCE/FINANCIAL IMPACT:

There is no direct cost to expanding this program, although adding a fourth tier to the Deep Green Incentive Program would allow for a 25% reduction in permit fees for Built

Green 4-Star and Passive House Institute US (PHIUS+) projects in areas outside of the Mixed-Use Residential (MUR) zones.

RECOMMENDATION

No action is required at this time. Staff recommends that Council discuss potential expansion of the Deep Green Incentive Program as recommended by the Planning Commission and provide guidance necessary to amend Ordinance No. 839 (Attachment A) for potential adoption on February 4, 2019.

Approved By: City Manager ***DT*** City Attorney ***MK***

BACKGROUND

In September 2015, Council discussed Priority Recommendations to implement the Climate Action Plan (CAP) and determined that staff should pursue the following initiatives during the 2016-2019 timeframe:

- Adopt a Living Building Challenge Ordinance and other incentives for "net zero" development (this became the Deep Green Incentive Program, SMC 20.50.630);
- Examine feasibility of District Energy in areas that are likely to undergo redevelopment, focusing on the 185th Street Station Subarea as the case study (this became a Climate Action Analysis for the subarea); and
- Conduct a Solarize campaign.

By the end of 2017, staff had fully or substantially completed each of the 2016-2019 Priority Recommendations, including an update to the Sustainable Shoreline website that tracks indicators of sustainability. Therefore, Council needed to select a new set of recommendations to prioritize for implementation over the next few years.

On October 30, 2017, Council identified the following 2018-2020 Priority Recommendations:

- Achieve citywide Salmon-Safe certification (2018);
- Explore expanding green building regulations to commercial zoning (2018);
- Encourage retrofits of existing buildings to use water and energy more efficiently, and to fuel-switch from heating oil and natural gas to electric heat pump or other less carbon-intensive technologies (2019); and
- Implement recommendations from the Climate Action Analysis for the 185th Street Station Subarea (2020).

The staff report for the October 30, 2017 meeting is available here: http://cosweb.ci.shoreline.wa.us/uploads/attachments/cck/council/staffreports/2017/staffreport103017-8c.pdf

At its 2018 Strategic Planning Retreat on March 16-17, 2018, the City Council amended Goal #2, Action Step #4 to account for these new priorities (**emphasis** added):

> *Goal #2- Improve Shoreline's infrastructure to continue the delivery of highly-valued public services:*
>
> - *Action Step #4- Implement the 2018-2020 Priority Environmental Strategies, including achievement of citywide Salmon-Safe certification,* ***consideration of expanding green building mandates****, and appointment of a stakeholder committee to evaluate and develop a recommendation on the implementation of recommendations from the Climate Action Analysis for the 185th Street Station Subarea.*

The green building mandate in station subareas drastically increased the number of Built Green registered projects in Shoreline. There were 168 projects registered in 2018. Conversely, the Deep Green Incentive Program (DGIP) has been in place for a year-and-a-half and is just receiving its first application. Since the mandate was working much more effectively than the incentive program, Council asked staff to consider

expanding the mandate to commercial zoning when they adopted their 2018-2020 Priority Recommendations to implement the CAP.

Process

On August 2, 2018, the Planning Commission discussed various options for expanding the green building mandate to commercial zoning. The staff report for that meeting is available here: http://www.shorelinewa.gov/home/showdocument?id=39436.

The Commission was specifically asked to consider the following:

- Should the green building mandate be extended to commercial zoning?
    - If so, in which commercial zoning categories should the mandate apply?
        - Mixed Business (MB); and/or
        - Town Center (TC); and/or
        - Community Business (CB); and/or
        - Neighborhood Business (NB)
    - If so, which certification protocols are appropriate to fulfill the requirement?
        - Built Green 4-Star; and/or
        - Passive House Institute US; and/or
        - Leadership in Energy and Environmental Design (LEED) Gold; and/or
        - Others?

The Commission did not reach consensus on a recommendation and requested staff solicit additional input from green building certification agencies, the City's Economic Development Manager, and market-rate developers to inform a continued discussion.

The Commission considered this issue again at its September 6, 2018 meeting, and based on the further research, the staff recommendation changed. Rather than expanding the green building mandate, staff proposed expanding the Deep Green Incentive Program (DGIP), Subchapter 9, SMC 20.50, by adding a fourth tier to include incentives for Built Green 4-Star and PHIUS+ projects in areas outside of MUR zoning. The staff report for the September 6 meeting is available here: http://www.shorelinewa.gov/home/showdocument?id=40690.

The Commission held a public hearing on October 18, 2018 and made a recommendation to Council to adopt an expansion to the DGIP as shown in Attachment A, Exhibit A to this staff report. The staff report for the October 18 hearing is available here: http://www.shorelinewa.gov/home/showdocument?id=41043.

Due to a procedural issue, the Commission held a second public hearing on December 6, 2018. No changes were made to the Commission recommendation. The staff report for the December 6 hearing is available here: http://www.shorelinewa.gov/home/showdocument?id=41431.

Programs

Throughout the process of development of the DGIP, which was adopted in April 2017, the Commission and Council were presented with information about different certification agencies and programs. The agencies and programs are listed below, and

Attachment B provides a detailed description of each program (referred to as protocols), including comparisons between certification processes and areas of emphasis. The descriptions in Attachment B were commissioned by the King County Cities Climate Collaboration (K4C) as part of a package to help jurisdictions administer green building programs.

Note that Tier 1 programs are more ambitious than Tier 3 programs and are therefore rewarded with greater incentives in Shoreline's DGIP.

The International Living Future Institute (ILFI) administers three (3) programs that are currently included in the DGIP:

1. Living Building Challenge (Tier 1)
2. Petal Recognition (Tier 2)
3. Zero Energy (Tier 3 when combined with Salmon-Safe certification)

Built Green administers three (3) programs that are currently included in the DGIP or mandated in the MUR zones:

1. Emerald Star (Tier 2)
2. 5-Star (Tier 3)
3. 4-Star (required in MUR zones)

US Green Building Council (USGBC) administers one (1) program that is currently included in the DGIP:

1. LEED Platinum (Tier 3)

Passive House Institute US (PHIUS) was not included in the 2017 DGIP, although the Commission expressed interest in the program. Council direction to consider expanding the green building mandate was an opportunity to re-examine how this certification option could be included. In addition to adding the PHIUS+ certification to the proposed Tier 4, staff recommends adding PHIUS+ Source Zero with a companion Salmon-Safe certification to Tier 3 of the DGIP. Additional information on PHIUS, since the certification was not extensively described in previous staff reports, is included here:

> In previous discussions and drafts of regulatory language for this project, the certifying organization was often referred to by the acronym PHIUS, while the certification program was truncated to Passive House. The appropriate name for the certification is PHIUS+. PHIUS also offers a net zero program, called PHIUS+ Source Zero. The latter is comparable to the ILFI Zero Energy certification, which is currently eligible for Tier 3 of the DGIP if paired with a Salmon Safe certification.
>
> PHIUS+ Source Zero is an additional recognition that project teams can pursue after achieving PHIUS+ targets. Source Zero extends from the PHIUS+ Standard, which develops numerical energy targets based on a robust analysis of local climate and construction costs. Achieving PHIUS+ means dramatically reducing demand. Achieving PHIUS+ Source Zero means meeting the small remainder with on-site renewable energy. This holistic view pursues both radical load reduction and clean energy production, allowing faster convergence toward the goal of eliminating carbon emissions from building energy.

DISCUSSION

Considerations to Expand the Deep Green Incentive Program

Cost Benefit Analysis

To understand the effect of expanding the green building mandate (or incentives) from the MUR zoning districts to commercial zoning districts and provide for different certification options, the City contracted with Rushing Co. to perform an analysis comparing three (3) green building protocols (LEED, Built Green, and Passive House, aka PHIUS+) against a code-compliant baseline project. The final report and appendices are included as Attachment C.

The baseline project is the Shoreline Apartments building currently under construction at the corner of N 175th Street and 15th Avenue NE (the site of the former Post Office). This project was chosen because it is a mixed-use structure, similar to what could be built in MB or CB zoning throughout the city, and because it utilizes the 2015 WA State Energy Code.

Part of the evaluation includes side-by-side paths for compliance for each of four (4) building protocols (three green building and one code-compliant baseline). These include:

a. A list of strategies for compliance, i.e. a LEED checklist (appendices to Attachment C);
b. Evaluation of comparable levels of certification;
c. Rough order of magnitude (ROM) costs of each path;
d. Design and construction impacts of each path; and
e. Environmental performance benefits of each path.

Market-Rate Developer Feedback

Planning and Economic Development staff engaged several developers with current or potential projects in Shoreline to understand how a green building mandate in commercial zones could impact their decision about whether or not to build locally.

Attachment D is a letter from Merlone Geier, potential developer of the Community Renewal Area at Shoreline Place (site of Central Market and former Sears). The attached memo conveys their points directly, but the bullets below summarize conversations that staff had with them and other developers.

- A common assumption is that using green building techniques instead of conventional building techniques simply reduces the level of profit for a developer. However, a mandate for green building can actually burden the land to the extent that the current use might be more profitable than redevelopment, which could either preclude or delay upgrading the site.
- Redevelopment of sites, particularly large sites like Shoreline Place, would represent a significant improvement in environmental performance over the existing 1960's development without further green building mandates. This is because new development would be required to conform to the 2015 Energy Code, the Department of Ecology's Low-Impact Development standards, and the

Shoreline Municipal Code's frontage improvements and landscaping requirements. New codes and requirements result in building and site design that performs significantly better than when the sites were originally built out.

- If sites become burdened with mandates, to the extent that redevelopment is not feasible, Shoreline would not realize the environmental benefits of newer construction and the Shoreline community would not realize the benefits of an updated commercial center, mixed-use or senior housing, or other uses that have been envisioned for various sites.
- The market may soon be due for another correction and financing for new construction projects may become more competitive. Some financial institutions currently do not place a premium on green building and may even consider innovative building techniques a risk.
- Commercial tenants have specific needs based on their use (for example, a commercial kitchen has different design considerations and water usage than a retail store), so often site developers build the shell of a building and work with prospective tenants to finish the space to suit their specifications.
- It has not been demonstrated that commercial tenants are willing to pay higher rent or construction costs based on projected utility savings.
- Retail tenants often source their own fixtures and buy in bulk so a local building code requiring unique specifications adds cost and complexity to the lease-up process.
- A number of factors, including competition from online retailers, are putting additional financial pressure on brick and mortar stores.

Green Building Certification Agency Feedback

Following the August 2, 2018 Commission meeting, staff requested feedback regarding program equivalency between Built Green 4-Star, PHIUS+, and LEED Gold from K4C, Built Green, and PHIUS. Below are some salient points from those conversations:

- Data from Rushing's Comparative Analysis showed that LEED Gold certification was significantly less expensive (and also less environmentally beneficial with regard to reduced carbon emissions) than either 4-Star or PHIUS+. Therefore, a developer seeking the least-cost option would be more likely to choose LEED Gold than the other two eligible programs to fulfill a mandate.
- Both LEED Gold and 4-Star protocols are more holistic and consider a wider range of criteria than PHIUS+. However, PHIUS's focus on energy performance leads to greater conservation than the more holistic protocols. In terms of program equivalency, this means it is still not a direct "apples to apples" comparison.
- Some jurisdictions require both LEED Gold and PHIUS certifications for construction of their own new facilities to achieve deep carbon reductions in addition to non-toxic materials, water conservation, and improved site design.
- PHIUS+ certification could be conditioned to include a companion Salmon-Safe certification, in the same way that ILFI's Zero Energy projects are currently required to in order to achieve Tier 3 incentives.
- Because the Evergreen Sustainable Development Standard is the green building protocol required for affordable housing and public school projects that utilize State funding, it might create a burden to also require those projects to attain a

dual certification in order to fulfill a green building mandate. This could reduce the ability of housing providers that are reliant on State funding to build projects near future light rail stations.

- Seattle City Light offers incentives for projects that go above what is required by code. However, their incentives do not apply if a project is mandated to achieve such performance, regardless of whether a Building, Energy, or Development Code created the mandate.

Green Building Mandate Versus Incentive in Different Zones

Whether or not requiring green building certification in certain zoning designations while incentivizing it in others would be justifiable and advisable became a primary question that needed to be resolved before any recommendations could be made. One factor to consider is whether different conditions exist in areas with Mixed-Use Residential zoning as opposed to commercial zoning. As an example, it is illustrative to compare Mixed-Use Residential 70-foot height limit (MUR-70') and Mixed Business (MB).

MUR zoning was adopted exclusively in the light rail station subareas. MB zoning is found almost exclusively along Aurora Avenue N. There are similarities between the two zones, but different factors drive development in each of these areas and, as such, different uses may be predominant and different market forces may be at play.

The height limit in both of these zones is 70 feet and the allowable use mix is relatively similar. Common construction types are referred to as "five over one" or "five over two" because five (5) stories of wood-framing are generally built over one (1) or two (2) levels of concrete. These developments tend to feature retail or office space on the ground-floor level with apartments above. This style is likely to be built in both the MUR-70' and MB zones.

Since traffic volumes and high-capacity transit access are critical in analyzing market demand for various types of uses, such as hotels or office buildings, it is important to differentiate between the primary drivers in each area. Aurora Avenue N is automobile-oriented and the north/south orientation means that lots of commuters travel this corridor daily. This creates favorable exposure for businesses and easy access for customers. The RapidRide lanes and proximity to the Interurban Trail also provide amenities to attract residents that do not own cars. Explosive growth in Seattle, City investment in improvements, and other economic and market factors also influence demand in this area.

In the light rail station subareas, the primary amenity driving growth will be the construction of Lynnwood Link light rail stations, expected to be operational in 2024. MUR zones were designed to promote a variety of housing styles and neighborhood-serving businesses. The transit orientation of these zones is meant to encourage alternatives to automobile dependence.

An important distinction between the MB and MUR-70' zoning designations is that regardless of whether the housing market corrects or the retail market contracts, the light rail stations will still create demand for housing and business growth in the area. The City used capital investments like stormwater and multi-modal transportation

improvements to encourage private market investment along the primary retail corridor of Aurora Avenue instead of increasing development capacity or expanding allowable uses. Incentives, like reduced cost to develop because frontage improvements already existed, focused on economic development and establishment of businesses that residents desire. Redevelopment of this area will depend heavily on real estate market trends, including pressures on brick and mortar retailers.

In contrast, the City significantly increased development capacity in light rail station subareas but conditioned it so that new buildings would contain features desired by the community, namely affordability and energy and water conservation. The focus was on creating a sustainable community with regard to environmental stewardship, social equity, and economic development. Redevelopment of this area will be tied directly to anticipated light rail service.

While economic development incentives exist along the Aurora Corridor and in the light rail station subareas (like Planned Actions in Town Center and the station subareas that eliminate the need for additional environmental analysis), a mandate in commercial zoning may preclude or delay development, whereas this does not seem to be hampering redevelopment in station subareas.

In fact, the MUR zoning mandate has drastically increased the number of 4-Star registrations to 168 for 2018. This is in contrast to zero (0) registrations from 2010-2015, five (5) in 2016, and seven (7) in 2017.

Even though the DGIP has been in effect for over a year-and-a-half, the City has just received its first application for the program. Additional financial incentives or code departures provided by a fourth tier of incentives may encourage developments along Aurora Avenue, and elsewhere in the city, to consider building green.

Staff Conclusions and Recommendation

Based on the considerations summarized above and in consultation with the City Manager's Office, staff came to the following conclusions:

- Greater environmental benefit could be realized by planned redevelopment of large commercial sites than by potentially precluding or delaying such projects in an effort to gain even greater environmental performance.
- It is still desirable to encourage large commercial sites to build to a standard that requires greater attention to energy and water conservation, materials selection, context of place and site, operations and maintenance, transportation options, and equity and inclusion than the current building and development codes. However, it might be more effective to encourage such better design through expanded incentives rather than mandates.
- It would be justifiable to mandate a level of green building in MUR zoning while incentivizing it in other zoning designations within the city. This is based on different market forces pertaining to the impending arrival of light rail service and concurrent upzoning that significantly increased development capacity within these areas.
- It would be acceptable to have one level of incentives that rewards holistic and energy-centric protocols equally because, while the City values more holistic

programs and built most of the incentive program around this criterion, the Council also set specific targets to reduce emissions, and buildings are a primary source of carbon pollution.
- Commercial projects built in MUR zones should not be excluded from the green building requirement because the City does not offer a program option to fulfill it. (Built Green only certifies residential and mixed-use projects.)
- Affordable housing projects and the non-profit agencies that build them should not be excluded from developing in the MUR zones because the Evergreen Sustainable Development Standard is not an option to fulfill the mandate and dual certification could be prohibitively expensive.

Proposed Regulatory Changes

Parking Reduction

On September 6, the Commission supported the change to expand the incentive program rather than the mandate and suggested one additional revision.

With regard to parking, Shoreline Municipal Code (SMC) 20.50.400 outlines potential reductions available through the DGIP (see below). Tier 1 is eligible for a 50% reduction, Tier 2 is eligible for a 35% reduction, and Tier 3 is eligible for a 20% reduction. Adding another tier that followed the pattern of decreasing the available reduction by 15% per tier would only leave a 5% parking reduction for Tier 4.

One potential option to make a parking reduction incentive more meaningful would be to make it cumulative. SMC 20.50.400(A) Reductions to minimum parking requirements articulates multiple ways to achieve a parking reduction, but SMC 20.50.400(F)&(G) specify that reductions may not be combined. The Commission supported the staff proposal of amending SMC 20.50.400(G) to remove reference to the DGIP.

The Commission further suggested that SMC 20.50.400(G), in its entirety, should be deleted, which would allow for affordable housing parking reductions to be combined with other parking reductions. The relevant portions of text from SMC 20.50.400 are below. Note that no changes are proposed to sections A or E, but these are included because they are relevant to SMC 20.50.400(G). A new change is proposed for SMC 20.50.400(F) that would allow parking reductions for the DGIP to be combined with those for proximity to light rail stations. Additional discussion and examples of how this could impact the number of required stalls in several areas of the city follows the code language.

Parking Reduction Code Amendments

The following proposed code amendments address these recommendations:

SMC 20.50.400- Reductions to minimum parking requirements

A. Reductions of up to 25 percent may be approved by the Director using a combination of the following criteria:

1. On-street parking along the parcel's street frontage.
2. Shared parking agreement with nearby parcels within reasonable proximity where land uses do not have conflicting parking demands. The

number of on-site parking stalls requested to be reduced must match the number provided in the agreement. A record on title with King County is required.

3. Parking management plan according to criteria established by the Director.
4. A City approved residential parking zone (RPZ) for the surrounding neighborhood within one-quarter mile radius of the subject development. The RPZ must be paid by the developer on an annual basis.
5. A high-capacity transit service stop within one-quarter mile of the development property line with complete City approved curbs, sidewalks, and street crossings.
6. A pedestrian public access easement that is eight feet wide, safely lit and connects through a parcel between minimally two different rights-of-way. This easement may include other pedestrian facilities such as walkways and plazas.
7. City approved traffic calming or traffic diverting facilities to protect the surrounding single-family neighborhoods within one-quarter mile of the development.
8. Retention of at least 20 percent of the significant trees on a site zoned MUR-70'.
9. Replacement of all significant trees removed on a site zoned MUR-70' as follows:
    a. One existing significant tree of eight inches in diameter at breast height for conifers or 12 inches in diameter at breast height for all others equals one new tree.
    b. Each additional three inches in diameter at breast height equals one additional new tree, up to three trees per significant tree removed.
    c. Minimum Size Requirements for Replacement Trees under This Provision. Deciduous trees shall be at least one and one-half inches in caliper and evergreens six feet in height.

B. A project applying for parking reductions under the Deep Green Incentive Program may be eligible ~~for commercial and multi-family projects~~ based on the intended certification ~~they intend to achieve. No parking reductions will be eligible for single-family projects.~~ Parking reductions are not available in R-4 and R-6 zones. Reductions will be based on the following tiers:

1. Tier 1 – Living Building or Living Community Challenge Certification: up to 50% reduction in parking required under SMC 20.50.390 for projects meeting the full International Living Future Institute (ILFI) program criteria;
2. Tier 2 – Living Building Petal or Emerald Star Certification: up to 35% reduction in parking required under 20.50.390 for projects meeting the respective ILFI or Built Green program criteria;
3. Tier 3 - LEED Platinum, 5-Star, ~~or Net~~ Zero Energy ~~Building~~/Salmon Safe, or PHIUS+ Source Zero/Salmon Safe Certification: up to 20% reduction in parking required under 20.50.390 for projects meeting the respective US Green Building Council, Built Green, ~~or~~ ILFI, PHIUS and/or Salmon Safe program criteria.
4. Tier 4- PHIUS+ or 4-Star Certification: up to 5% reduction in parking required under 20.50.390 for projects meeting the respective PHIUS or Built Green program criteria.

E. Reductions of up to 50 percent may be approved by the Director for the portion of housing providing low income housing units that are 60 percent of AMI or less as defined by the U.S. Department of Housing and Urban Development.
F. A parking reduction of 25 percent may be approved by the Director for multifamily development within one-quarter mile of the light rail station. These parking reductions may not be combined with parking reductions identified in subsections ~~A, B and E~~ of this section.
~~G. Parking reductions for affordable housing or the Deep Green Incentive Program may not be combined with parking reductions identified in subsection A of this section.~~

Parking Reduction Examples
Proposed revisions to the DGIP would create an incentive for 4-Star and PHIUS+ certifications, while these programs would be mandatory in MUR zoning. Therefore, it is important to examine how parking reductions would be applied in various scenarios. It is also necessary to examine different scenarios to evaluate the effect of allowing affordable housing parking reductions to be cumulative.

Below, please find several examples of potential parking requirements for a theoretical 100-unit building, based on different zones, certification programs, and levels of affordability. For the first two (2), the "a" scenario is a more likely development (assuming 4-Star [Tier 4 or mandatory] certification and 20% affordable units targeted towards households making 70% of Area Median Income [AMI], which is the minimum State requirement to participate in Property Tax Exemption program). The "b" scenario supposes a more ambitious project (assuming an Emerald Star [Tier 2] certification and 20% affordable units targeted towards 60% AMI, which would make a project eligible for reductions under SMC 20.50.400). For the sake of simplicity, all affordable units are assumed to be studios and one-bedrooms.

For each scenario, the analysis assumes that 75 of the units are studios and one-bedrooms (.75 parking stalls required per unit), while 25 of the units are two-bedrooms (1.5 parking stalls required per unit). With no reductions, such a building would be required to build **94** parking stalls, four (4) of which would need to be accessible for people with disabilities. Because the requirement for accessible stalls is a Building Code requirement, not the Development Code, and is tied to units, overall parking reductions do not change the number of required accessible stalls.

It should also be noted that each of the potential reductions below are "up to", so each of the scenarios illustrate a maximum parking reduction, not an automatic one.

<u>Example 1a: 4-Star project in Mixed Business zoning within a quarter mile of a RapidRide stop on Aurora Avenue, 20% of units affordable to 70% AMI</u>

- Eligible reductions:
  - 5% reduction through DGIP Tier 4 per SMC 20.50.400(B)(4) and SMC 20.50.630(E)(3)(b)(iv)
  - 25% reduction for proximity to high-capacity transit service per SMC 20.50.400(A)(5)

        - **Note that this would need to be combined with at least one other criteria from SMC 20.50.400(A).*
- Total number of required stalls: **68**

Example 1b: Emerald-Star project in Mixed Business zoning within a quarter mile of a RapidRide stop on Aurora Avenue, 20% of units affordable to 60% AMI.

- Eligible reductions
    - 35% reduction through DGIP Tier 2 per SMC 20.50.400(B)(2) and SMC 20.50.630(E)(3)(b)(ii)
    - 25% reduction for proximity to high-capacity transit service per SMC 20.50.400(A)(5)
        - **Note that this would need to be combined with at least one other criteria from SMC 20.50.400(A).*
    - 50% reduction for 20% of units per SMC 20.50.400(E)
- Total number of required stalls: **42**

Example 2a: 4-Star project in Mixed-Use Residential-45' zoning within a quarter mile of light rail station, 20% of units affordable to 70% AMI

- Eligible reductions:
    - 25% reduction for proximity to light rail station per SMC 20.50.400(F)
- Total number of required stalls: **71**

Example 2b: Emerald Star project in Mixed-Use Residential-45' zoning within a quarter mile of light rail station, 20% of units affordable to 60% AMI

- Eligible reductions:
    - 35% reduction through DGIP Tier 2 per SMC 20.50.400(B)(2) and SMC 20.50.630(E)(3)(b)(ii)
    - 25% reduction for proximity to light rail station per SMC 20.50.400(F)
    - 50% reduction for 20% of units per SMC 20.50.400(E)
- Total number of required stalls: **42**
- If this project also met a combination (two [2] or more) of the criteria in 20.50.400(A), and this was allowed to be cumulative (by striking the entire last sentence in SMC 20.40.500[F]), it could be eligible for an additional 25% reduction. Under this scenario, the total number of required stalls would be **32**.

Example 3: Emerald Star project in Mixed-Business zoning within a quarter mile of a RapidRide stop on Aurora Avenue, 100% of units affordable to below 60% AMI

- Eligible reductions:
    - 35% reduction through DGIP Tier 2 per SMC 20.50.400(B)(2) and SMC 20.50.630(E)(3)(b)(ii)
    - 25% reduction for proximity to high capacity transit per SMC 20.50.400(A)(5)
        - **Note that this would need to be combined with at least one other criteria from 20.50.400(A).*
    - 50% reduction for 100% of units per SMC 20.50.400(E)
- Total number of required stalls: **24**

Parking Reduction Staff Conclusions and Recommendation

- Allowing cumulative parking reductions may encourage developers to take advantage of the DGIP citywide.

- In light rail station subareas, allowing projects to further reduce parking if they target housing affordability for 60% AMI as opposed to 70% AMI could encourage deeper levels of affordability.
- However, allowing green and affordable projects to further reduce parking by an additional 25% for fulfilling requirements in SMC 20.50.400(A) may be too great a reduction for the benefits.
- In areas within a quarter mile of RapidRide on Aurora Avenue, projects would need to fulfill an additional requirement from SMC 20.50.400(A) to be able to utilize proximity to transit to further reduce parking, which could provide additional amenities.
- To achieve the greatest reduction possible, a project would need to be almost entirely affordable to households making 60% or less of AMI, achieve an ambitious level of green building, be in proximity to transit, and fulfill an additional criterion from SMC 20.40.500(A). Staff believes that it is worthwhile to create an option to support such a project, which would likely be through a non-profit or agency affordable housing provider.

Compliance with minimum standards (SMC 20.50.630(F))
When the original DGIP was adopted in April 2017, there was an interest in trying to make all programs within each tier as comparable as possible. However, one of the primary differences between Built Green and International Living Future Institute programs is that Built Green uses energy and water *modeling* for 4- and 5-Star certifications, whereas ILFI requires a *performance* period and analyzes actual use before awarding any certification. Built Green staff offered to perform additional post-occupancy analysis for 5-Star projects applying through the DGIP to make the programs more comparable, which is reflected in SMC 20.50.630(F) below.

However, if the DGIP expands to also include 4-Star citywide, and this encourages additional project registrations, Built Green staff is concerned that they will not have the capacity to perform the additional analysis. PHIUS also uses modeling rather than performance, and shares concerns about staff capacity to commit to additional work for Shoreline that is outside of their standard process.

Staff recommends striking letter “b” from the code language below and relying on the modeling procedures currently used by Built Green and PHIUS, which according to recent studies by both organizations are very reliable at predicting performance. In fact, the studies revealed that buildings are performing better than modeled.

SMC 20.50.630(F)

7. No later than two years after issuance of a final Certificate of Occupancy for the project, or such later date as requested in writing by the owner and approved by the Director for compelling circumstances, the owner shall submit to the Director the project’s certification demonstrating how the project complies with the standards contained in this subsection. Compliance must be demonstrated through an independent certification from ILFI~~, Built Green,~~ or USGBC/Green Building Cascadia Institute (GBCI). A request for an extension to this requirement must be in writing and must contain detailed information about the need for the extension.

a. For projects pursuing ILFI certification (Living Building Challenge, Living Community Challenge, Petal Recognition, or ~~Net~~ Zero Energy ~~Building~~), performance-based requirements such as energy and water must demonstrate compliance through certification from ILFI within the two-year timeframe noted above.
~~b. For projects pursuing Built Green certification post-occupancy compliance must be demonstrated with analysis proving 12 consecutive months of net zero energy performance and/or 70% reduction in occupant water use. It is the owner's responsibility to submit utility information to Built Green so analysis can be conducted and shown to the Director.~~
c. For projects pursuing LEED certification, the applicant or owner must show proof of certification by way of the final LEED Construction Review report and LEED Certificate issued by USGBC/GBCI.

Next Steps

February 4, 2019 – Council adoption of proposed Ordinance No. 839

SUMMARY

Mandating a level of green building in MUR zoning while incentivizing it in other zoning designations within the city appears to be justifiable based on different market forces, the impending arrival of light rail service, and concurrent upzoning that significantly increased development capacity within these areas. Commercial projects built in MUR zones should not be excluded from the green building requirement because the City does not offer a program option to fulfill it. Affordable housing projects should not be excluded from developing in the MUR zones because it could be prohibitively expensive.

The current DGIP consists of a tiered system that rewards projects based on the stringency of the certification a project seeks to attain. Eligibility for benefits is currently structured by the following level of certification protocol:

- Tier 1 – Living Building Challenge or Living Community Challenge;
- Tier 2 – Emerald Star or Petal Recognition; or
- Tier 3 – LEED Platinum, 5-Star, or Zero Energy plus Salmon-Safe.

Staff recommends that an expanded incentive program be organized as follows:

- Tier 1- Living Building Challenge or Living Community Challenge;
- Tier 2- Emerald Star or Petal Recognition;
- Tier 3- LEED Platinum, 5-Star, Zero Energy plus Salmon Safe, or PHIUS+ Source Zero plus Salmon Safe; or
- Tier 4- PHIUS+ or 4-Star.

Updates to the development code to support cumulative parking reductions may encourage developers to take advantage of the DGIP citywide.

RESOURCE/FINANCIAL IMPACT

There is no direct cost to expanding this program, although adding a fourth tier to the Deep Green Incentive Program would allow for a 25% reduction in permit fees for Built Green 4-Star and Passive House Institute US (PHIUS+) projects in areas outside of the Mixed-Use Residential (MUR) zones.

RECOMMENDATION

No action is required at this time. Staff recommends that Council discuss potential expansion of the Deep Green Incentive Program as recommended by the Planning Commission and provide guidance necessary to amend Ordinance No. 839 (Attachment A) for potential adoption on February 4, 2019.

ATTACHMENTS

Attachment A: Ordinance No. 839
Attachment A, Exhibit A: Proposed Development Code Amendments
Attachment B: Green Building Rating Systems Overview
Attachment C: Comparative Analysis of Green Building Protocols
Attachment D: Merlone Geier Memo

ORDINANCE NO. 839

AN ORDINANCE OF THE CITY OF SHORELINE, WASHINGTON AMENDING CHAPTERS 20.20, 20.30 AND 20.50 OF THE SHORELINE MUNICIPAL CODE TITLE 20, THE UNIFIED DEVELOPMENT CODE, TO EXPAND THE DEEP GREEN INCENTIVE PROGRAM.

WHEREAS, the City of Shoreline is a non-charter optional municipal code city as provided in Title 35A RCW, incorporated under the laws of the state of Washington, and planning pursuant to the Growth Management Act, Title 36.70A RCW; and

WHEREAS, Shoreline Municipal Code (SMC) Title 20 is the Unified Development Code setting forth the zoning and development regulations for the City; and

WHEREAS, on April 17, 2017, the City Council adopted Ordinance 760 establishing a Deep Green Incentive Program to encourage the development of buildings that meet the criteria for sustainable certification through a variety of incentives; and

WHEREAS, certain portions of these green building regulations are mandated in the Mixed Use Residential (MUR) zones of the City's Light Rail Station Subareas; and

WHEREAS, on August 2, 2018, the Shoreline Planning Commission considered Planning Staff's recommendation to expand the green building mandate to commercial zoning districts throughout the City; and

WHEREAS, subsequently, Planning Staff solicited input from stakeholders and determined that rather than expanding the green building mandate incentives would be provided for projects outside of the MUR zoning districts; and

WHEREAS, on September 6, 2018, the Planning Commission considered Planning Staff's revised recommendation; and

WHEREAS, on October 18, 2018, the Shoreline Planning Commission held a public hearing on the proposed amendments so as to receive public testimony and concurred with Planning Staff's recommendation for incentives outside of the MUR zoning districts; and

WHEREAS, the City provided public notice of the amendments and the public hearing as provided in SMC 20.30.070; and

WHEREAS, pursuant to RCW 36.70A.370, the City has utilized the process established by the Washington State Attorney General so as to assure the protection of private property rights; and

WHEREAS, pursuant to RCW 36.70A.106, the City has provided the Washington State Department of Commerce with a 60-day notice of its intent to adopt the amendment(s) to its Unified Development Code; and

WHEREAS, the environmental impacts of the amendments resulted in the issuance of a Determination of Non-Significance (DNS) issued on November 15, 2018 pursuant to the State Environmental Policy Act (SEPA); and

WHEREAS, to ensure procedural compliance with SEPA, the Shoreline Planning Commission held a second public hearing on December 6, 2018 and affirmed its October 18, 2018 recommendation; and

WHEREAS, on January 14, 2019, the City Council held a study session on the proposed amendments as recommended by the Planning Commission; and

WHEREAS, the City Council has considered the entire public record, public comments, written and oral, and the Planning Commission's recommendation; and

WHEREAS, the City Council has determined that the amendments are consistent with and implement the Shoreline Comprehensive Plan and serves the purpose of the Unified Development Code as set forth in SMC 20.10.020;

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF SHORELINE, WASHINGTON DO ORDAIN AS FOLLOWS:

Section 1. Amendment. Chapters 20.20, 20.30, and 20.50 of Title 20 of the Shoreline Municipal Code, Unified Development Code are amended as set forth in Exhibit A to this Ordinance.

Section 2. Corrections by City Clerk or Code Reviser. Upon approval of the City Attorney, the City Clerk and/or the Code Reviser are authorized to make necessary corrections to this ordinance, including the corrections of scrivener or clerical errors; references to other local, state, or federal laws, codes, rules, or regulations; or ordinance numbering and section/subsection numbering and references.

Section 3. Severability. Should any section, subsection, paragraph, sentence, clause, or phrase of this ordinance or its application to any person or situation be declared unconstitutional or invalid for any reason, such decision shall not affect the validity of the remaining portions of this ordinance or its application to any person or situation.

Section 4. Publication and Effective Date. A summary of this Ordinance consisting of the title shall be published in the official newspaper. This Ordinance shall take effect five days after publication.

PASSED BY THE CITY COUNCIL ON FEBRUARY 4, 2019.

_____
Mayor Will Hall

ATTEST:

_____
Jessica Simulcik-Smith
City Clerk

APPROVED AS TO FORM:

_____
Margaret King
City Attorney

Date of Publication: , 2019
Effective Date: , 2019

Exhibit A to Ordinance No. 839

Amendments to Shoreline Municipal Code Title 20
Chapters 20.20, 20.30, and 20.50

20.20.016 D definitions.

Deep Green- refers to an advanced level of green building that requires more stringent standards for energy and water use, stormwater runoff, site development, materials, and indoor air quality than required by the Building Code. With regard to the Deep Green Incentive Program, this definition is divided into tiers based on certification programs as follows:

- Tier 1- International Living Future Institute's (ILFI) Living Building Challenge™ or Living Community Challenge™;
- Tier 2- ILFI's Petal Recognition™ or Built Green's Emerald Star™; and
- Tier 3- US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Platinum™,; Built Green's 5-Star™,; or ILFI's ~~Net~~ Zero Energy ~~Building~~™ (~~N~~ZE~~B~~) or Passive House Institute US's (PHIUS)+Shift Zero™, in combination with Salmon Safe™ where applicable.
- Tier 4- Built Green's 4-Star™ or PHIUS+™.

20.30.080 Preapplication meeting.

A preapplication meeting is required prior to submitting an application for any project requesting departures through the Deep Green Incentive Program to discuss why departures are necessary to achieve certification through International Living Future Institute, Built Green, US Green Building Council, Passive House Institute US, or Salmon Safe programs. A representative from the prospective certifying agency(ies) will be invited to the meeting, but their attendance is not mandatory. If the project would not otherwise require a preapplication meeting, the fee for the preapplication meeting will be waived.

20.30.297 Administrative Design Review (Type A).

1. Administrative Design Review approval of departures from the design standards in SMC 20.50.220 through 20.50.250 and SMC 20.50.530 through 20.50.610 shall be granted by the Director upon their finding that the departure is:
   a) Consistent with the purposes or intent of the applicable subsections; or
   b) Justified due to unusual site constraints so that meeting the design standards represents a hardship to achieving full development potential.
2. Projects applying for the Deep Green Incentive Program by certifying through ~~for certification under~~ the Living Building or Community Challenge, Petal Recognition, Emerald Star, LEED-Platinum, 5-Star, 4-Star, PHIUS+, PHIUS+ Source Zero/Salmon Safe, or ~~Net~~ Zero Energy ~~Building~~/Salmon Safe programs may receive departures from development standards under SMC 20.40, 20.50, 20.60, and/or 20.70 upon the Director's finding that the departures meet A and/or B above, and as further described under 20.50.630. Submittal documents shall include proof of enrollment in the programs listed above.

20.40.046(D) Mixed-Use Residential Zones

D. ~~Four-Star Built Green construction is required all MUR zones.~~ Construction in MUR zones must achieve green building certification through one of the following protocols: Built Green 4-Star or PHIUS+. If an affordable housing or school project is required to certify through the Evergreen Sustainable Development Standard, this protocol shall fulfill the requirement.

20.50.400 Reductions to minimum parking requirements.

B. A project applying for parking reductions under the Deep Green Incentive Program may be eligible ~~for commercial and multi-family projects~~ based on the intended certification ~~they intend to achieve~~. ~~No parking reductions will be eligible for single-family projects~~. Parking reductions are not available in R-4 and R-6 zones. Reductions will be based on the following tiers:

1. Tier 1 – Living Building or Living Community Challenge Certification: up to 50% reduction in parking required under 20.50.390 for projects meeting the full International Living Future Institute (ILFI) program criteria;
2. Tier 2 – Living Building Petal or Emerald Star Certification: up to 35% reduction in parking required under 20.50.390 for projects meeting the respective ILFI or Built Green program criteria;
3. Tier 3 - LEED Platinum, 5-Star, PHIUS+ Source Zero/Salmon Safe, or~~Net~~ Zero Energy ~~Building~~/Salmon Safe Certification: up to 20% reduction in parking required under 20.50.390 for projects meeting the respective US Green Building Council, Built Green, PHIUS, ~~or~~ ILFI and/or Salmon Safe program criteria.
4. Tier 4- PHIUS+ or 4-Star: up to 5% reduction in parking required under 20.50.390 for projects meeting the PHIUS or Built Green program criteria.

C. In the event that the Director approves reductions in the parking requirement, the basis for the determination shall be articulated in writing.

D. The Director may impose performance standards and conditions of approval on a project, including a financial guarantee.

E. Reductions of up to 50 percent may be approved by the Director for the portion of housing providing low income housing units that are 60 percent of AMI or less as defined by the U.S. Department of Housing and Urban Development.

F. A parking reduction of 25 percent may be approved by the Director for multifamily development within one-quarter mile of the light rail station. These parking reductions may not be combined with parking reductions identified in subsection~~s~~ A~~, B, and E~~ of this section.

~~G. Parking reductions for affordable housing or the Deep Green Incentive Program may not be combined with parking reductions identified in subsection A of this section.~~

Subchapter 9: 20.50.630 – Deep Green Incentive Program (DGIP)

A. **Purpose.** The purpose of this section is to establish an incentive program for Living and Deep Green Buildings in the City of Shoreline. The goal of the DGIP is to encourage development that meets the International Living Future Institute's (ILFI) Living Building Challenge™, Living Community Challenge™, Petal Recognition™, or ~~Net~~ Zero Energy ~~Building~~™ (~~N~~ZE~~B~~) programs; Built Green's Emerald Star™ ~~or,~~ 5-

Star™, or 4-Star™ programs; the US Green Building Council's (USGBC) Leadership in Energy and Environmental Design™ (LEED) Platinum program; Passive House Institute US™'s PHIUS+ or PHIUS+Source Zero programs; and/or the Salmon Safe™ program by:

1. encouraging development that will serve as a model for other projects throughout the city and region resulting in the construction of more Living and Deep Green Buildings; and
2. allowing for departures from Code requirements to remove regulatory barriers.

B. **Project qualification.**

1. Application requirements. In order to request exemptions, waivers, or other incentives through the Deep Green Incentive Program, the applicant or owner shall submit a summary demonstrating how their project will meet each of the requirements of the relevant certification program, such as including an overall design concept, proposed energy balance, proposed water balance, and descriptions of innovative systems.
2. Qualification process. An eligible project shall qualify for the DGIP upon determination by the Director that it has submitted a complete application pursuant to SMC 20.30.297 Administrative Design Review, and has complied with the application requirements of this subsection.
3. The project must be registered with the appropriate third-party certification entity such as the International Living Future Institute, Built Green, US Green Building Council, Passive House Institute US, or Salmon Safe.
4. Projects requesting departures under the DGIP shall meet the current version of the appropriate certification program, which will qualify them for one of the following tiered packages of incentives:
    a. Tier 1 - Living Building Challenge or Living Community Challenge Certification: achieve all of the Imperatives of the ILFI programs;
    b. Tier 2 – Emerald Star or Petal Certification: satisfy requirements of Built Green program or three or more ILFI Petals, including at least one of the following- Water, Energy, or Materials; ~~or~~
    c. Tier 3- LEED Platinum, 5-Star, PHIUS+ Source Zero plus Salmon Safe, or ~~N~~ZE~~B~~ plus Salmon Safe: satisfy requirements of the respective USGBC, Built Green, PHIUS, ~~or~~ ILFI~~/~~, and/or Salmon Safe programs. The addition of Salmon Safe certification to PHIUS+ Source Zero or ~~N~~ZE~~B~~ projects is not required for detached single-family projects~~.~~; or
    d. Tier 4- PHIUS+ or 4-Star: achieve all requirements of the PHIUS or Built Green programs.

C. **Director's determination.** All Shoreline Deep Green Incentive Program projects are subject to review by the Director under Section 20.30.297. Any departures from the Shoreline Development Code (SMC Title 20) must be approved by the Director prior to submittal of building permit application.

D. **Incentives.** A project qualifying for the Shoreline Deep Green Incentive Program will be granted the following tiered incentive packages, based on the certification program for which they are applying:

1. A project qualifying for Tier 1 - Living Building Challenge or Living Community Challenge may be granted a waiver of up to 100% City-imposed pre-application and permit application fees. A project qualifying for Tier 2 – Emerald Star or Petal Recognition may be granted a waiver of up to 75% of City-imposed application fees. A project qualifying for Tier 3 – LEED Platinum, 5-Star, PHIUS+ Source Zero/Salmon Safe, or ~~N~~ZE~~B~~/Salmon Safe may be granted a waiver of up to 50% of City-imposed application fees. A project qualifying for Tier 4- PHIUS+ or 4-Star may be granted a waiver of up to 25% of City-imposed application fees.
2. Projects qualifying for the DGIP may be granted a reduced Transportation Impact Fee based on a project-level Transportation Impact Analysis.
3. Departures from Development Code requirements when in compliance with SMC 20.50.630(E).
4. Expedited permit review without additional fees provided in SMC Chapter 3.01

E. **Departures from Development Code requirements.** The following requirements must be met in order to approve departures from Development Code requirements:

1. The departure would result in a development that meets the goals of the Shoreline Deep Green Incentive Program and would not conflict with the health and safety of the community. In making this recommendation, the Director shall consider the extent to which the anticipated environmental performance of the building would be substantially compromised without the departures.
2. A Neighborhood Meeting is required for projects departing from standards in the R-4 or R-6 zones.
3. Departures from the following regulations may be granted for projects qualifying for the Shoreline Deep Green Incentive Program:
    a. SMC 20.50.020. Residential density limits
        i. Tier 1 – Living Building Challenge or Living Community Challenge Certification: up to 100% bonus for the base density allowed under zoning designation for projects meeting the full Challenge criteria;
        ii. Tier 2 – Emerald Star or Living Building Petal Certification: up to 75% bonus for the base density allowed under zoning designation for projects meeting the program criteria;
        iii. Tier 3 - LEED Platinum, 5-Star, or PHIUS+ Source Zero/Salmon Safe or ~~N~~ZE~~B~~/Salmon Safe Certification: up to 50% bonus for the base density allowed under zoning designation for projects meeting the program criteria~~.~~;
        iv. Tier 4- PHIUS+ or 4-Star: up to 25% bonus for the base density allowed under zoning designation for projects meeting the program criteria.

    Minimum lot size of 10,000 square feet is required in all zones with a density maximum in order to request a density bonus. Density bonus is

not available in R-4 and R-6 zones. Any additional units granted would be required to be built to the same green building standard as the first.

b. SMC 20.50.390. Parking requirements (not applicable in R-4 and R-6 zones):
    i. Tier 1 – Living Building Challenge or Living Community Challenge Certification: up to 50% reduction in parking required under 20.50.390 for projects meeting the full Challenge criteria;
    ii. Tier 2 – Emerald Star or Living Building Petal Certification: up to 35% reduction in parking required under 20.50.390 for projects meeting the program criteria;
    iii. Tier 3 - LEED Platinum, 5-Star, PHIUS+ Source Zero/Salmon Safe, or NZEB/Salmon Safe Certification: up to 20% reduction in parking required under 20.50.390 for projects meeting the program criteria.
    iv. Tier 4- PHIUS+ or 4-Star Certification: up to 5% reduction in parking required under 20.50.390 for projects meeting the program criteria.
c. Lot coverage standards, as determined necessary by the Director;
d. Use provisions, as determined necessary by the Director
e. Standards for storage of solid-waste containers;
f. Standards for structural building overhangs and minor architectural encroachments into the right-of-way;
g. Structure height bonus up to 10 feet for development in a zone with height limit of 35 feet. Height bonus is not available in R-4, R-6, R-8, and MUR-35' zones. Structure height bonus up to 20 feet for development in a zone with a height limit of 45 feet or greater; and
h. A rooftop feature may extend above the structure height bonus provided in SMC 20.50.020 or 20.50.050 if the extension is consistent with the applicable standards established for that rooftop feature within the zone.

F. **Compliance with minimum standards.**

1. For projects requesting departures, fee waivers, or other incentives under the Deep Green Incentive Program, the building permit application shall include a report from the design team demonstrating how the project is likely to achieve the elements of the program through which it intends to be certified.
2. For projects applying for an ILFI certification (Tiers 1, 2, or 3), after construction and within six (6) months of issuance of the Certificate of Occupancy, the applicant or owner must show proof that an LBC Preliminary Audit has been scheduled; such as a paid invoice and date of scheduled audit. After construction and within twelve months of issuance of Certificate of Occupancy, the applicant or owner must show a preliminary audit report from ILFI demonstrating project compliance with the Place, Materials, Indoor Air Quality, and Beauty/Inspiration Imperatives that do not require a performance period.
3. For projects aiming for Built Green Emerald Star (Tier 2), ~~or~~ 5-Star (Tier 3), or 4-Star (Tier 4) certification, after construction and within six (6) months of issuance of the Certificate of Occupancy, the applicant or owner must show proof that the

project successfully met Built Green certification by way of the Certificate of Merit from the program.

4. For projects pursuing LEED certification (Tier 3), the applicant or owner must show, after construction and within six (6) months of issuance of the Certificate of Occupancy, that the project has successfully completed the LEED Design Review phase by way of the final certification report.
5. For projects pursuing PHIUS+ (Tier 4) or PHIUS+ Source Zero certification (Tier 3), the applicant or owner must show, after construction and within six (6) months of issuance of the Certificate of Occupancy, that the project has successfully obtained the PHIUS+ or PHIUS+ Source Zero certification.
6. For projects pursuing Salmon Safe certification (Tier 3 in conjunction with ~~NZEB~~ or PHIUS+ Source Zero when applicable), the applicant or owner must show, after construction and within six (6) months of issuance of the Certificate of Occupancy, that the project has successfully obtained the Salmon Safe Certificate.
7. No later than two years after issuance of a final Certificate of Occupancy for the project, or such later date as requested in writing by the owner and approved by the Director for compelling circumstances, the owner shall submit to the Director the project's certification demonstrating how the project complies with the standards contained in this subsection. Compliance must be demonstrated through an independent certification from ILFI~~, Built Green,~~ or USGBC/Green Building Cascadia Institute (GBCI). A request for an extension to this requirement must be in writing and must contain detailed information about the need for the extension.
    a. For projects pursuing ILFI certification (Living Building Challenge, Living Community Challenge, Petal Recognition, or ~~Net~~ Zero Energy ~~Building~~), performance based requirements such as energy and water must demonstrate compliance through certification from ILFI within the two year timeframe noted above.
    ~~b. For projects pursuing Built Green certification post-occupancy compliance must be demonstrated with analysis proving 12 consecutive months of net zero energy performance and/or 70% reduction in occupant water use. It is the owner's responsibility to submit utility information to Built Green so analysis can be conducted and shown to the Director.~~
    c. For projects pursuing LEED certification, the applicant or owner must show proof of certification by way of the final LEED Construction Review report and LEED Certificate issued by USGBC/GBCI.
8. If the Director determines that the report submitted provides satisfactory evidence that the project has complied with the standards contained in this subsection, the Director shall send the owner a written statement that the project has complied with the standards of the Shoreline Deep Green Incentive Program. If the Director determines that the project does not comply with the standards in this subsection, the Director shall notify the owner of the aspects in which the project does not comply. Components of the project that are included in order to

comply with the minimum standards of the Shoreline Deep Green Incentive Program shall remain for the life of the project.

9. Within 90 days after the Director notifies the owner of the ways in which the project does not comply, or such longer period as the Director may allow for justifiable cause, the owner may submit a supplemental report demonstrating that alterations or improvements have been made such that the project now meets the standards in this subsection.
10. If the owner fails to submit a supplemental report within the time allowed pursuant to this subsection, the Director shall determine that the project has failed to demonstrate full compliance with the standards contained in this subsection, and the owner shall be subject to penalties as set forth in subsection 20.30.770.

7/12/2018

Green Building Rating Systems Overview
GreenTools Task 6 | King County-Cities Climate Collaboration (K4C)

About: This document provides an overview of the intricacies of green building rating systems, including LEED, Built Green, Salmon-Safe, Passive House, Living Building Challenge, and the Evergreen Sustainable Development Standard. It should be noted that rating systems continuously evolve, and this document stands as a snapshot in time for the version that was current at the time of this document's publication.

Audience: Plans Reviewers/Examiners, Inspectors, Permit Technicians, and Building Officials/Directors in King County.

LEED BD+C - Leadership in Energy and Environmental Design Building Design and Construction: New Construction v4

Administered by: US Green Building Council (USGBC) & Green Business Certification Institute (GBCI)

About:

- The most widely used green building rating system in the world.
- Applies to buildings that are being newly constructed or going through a major renovation. While this overview focuses on the New Construction pathway, BD+C also provides guidance for Core & Shell, Schools, Retail, Hospitality, Data Centers, Warehouses & Distribution Centers, and Healthcare.

Most significant shift from "typical" / WA State Energy Code:

- Most "typical", code compliant projects comply with LEED BD+C prerequisites
- Incremental improvements to design and construction processes and materials selection

What makes it green? This rating system provides sustainable solutions to address:

■ Land Management	■ Energy	■ Water	■ Transportation
■ Habitat	■ Building Materials	□ Equity & Inclusion	■ Health & Wellness
□ Food Access	■ Operations & Maintenance	□ Emergency & Disaster Prep	□ Aesthetic

Market Sectors:

□ Residential: Single Family	□ ADU/DADU
□ Residential: Multi-Family (Low-Rise)	■ Residential: Multi-Family (High-Rise)
■ Commercial: Office	■ Commercial: Retail
■ Hospitality	■ Institutional: Government
■ Institutional: Education (University)	■ Educational: K-12
■ Arts & Culture	□ Landscape & Public Realm
■ Healthcare & Laboratory	■ Data Facilities
■ Manufacturing	□ Transportation
■ Warehouse	□ Renovation

Certification Levels: Certified (40-49 points), Silver (50-59 pts), Gold (60-79 pts), Platinum (≥ 80 pts)

Minimum Project Requirements: Project must include a minimum of 1,000 square feet of gross floor area. Project must meet mandatory measures (prerequisites) and earn at least 40 total points.

Certification Process:

1. Confirm minimum program requirements & prerequisites
2. Register project with USGBC
3. Establish project goals and develop LEED Scorecard
4. Track project strategies
5. Compile documentation
6. Perform Quality Assurance Review

7. Submit to USGBC documentation
8. Certification granted by GBCI *(typically 6 months – 1 year following C of O)* and/or appeal credits

Other LEED Rating Systems:

- LEED-Homes - Applies to single family homes, low-rise multi-family (one to three stories), mid-rise multi-family (four to six stories) and high rises (above 6 stories, with LEED Provider's permission); includes Homes and Multifamily Low-rise and Multifamily Midrise.
- LEED-ID+C (Interior Design and Construction) – Applies to projects that are a complete interior fit-out; includes Commercial Interiors, Retail and Hospitality.
- LEED-ND (Neighborhood Development) – Applies to new land development projects or redevelopment projects containing residential uses, nonresidential uses, or a mix. Projects can be at any stage of the development process, from conceptual planning to construction; includes Plan and Built Project.
- LEED-O+M (Building Operations and Maintenance) – Applies to existing buildings that are undergoing improvement work or little to no construction; includes Existing Buildings, Schools, Retail, Hospitality, Data Centers, and Warehouses & Distribution Centers.

- https://new.usgbc.org/leed

Glossary:
LEED Scorecard – A tool that tracks project LEED progress. A preliminary score is recommended as a first step.

US Green Building Council (USGBC) – author of the LEED protocol.

Green Business Certification Institute (GBCI) – the third-party institution that reviews project certification documentation and awards certification.

Resources:
LEED Reference Guide for Building Design and Construction (v4)

Administrator Contact Information:
https://www.usgbc.org/articles/getting-started-bdc

Built Green

Administered by: Master Builders Association (MBA) of King and Snohomish Counties

About:

- Local Green Building Program: Developed in partnership with King County, Snohomish County, and other government agencies in Washington State.
- It was originally founded in 1999. Since then, over 32,000 projects have been certified.
- 52% of new homes in Seattle & 32% of new homes in King County were Built Green in 2016.

Most significant shift from "typical" / WA State Energy Code (WSEC):

- Built Green 3-Star requires the building energy model to show 10% better performance than WSEC OR two additional R406/C406 measures.
- Built Green 4-Star requires the building energy model to show 20% better performance than WSEC.

What makes it green? This rating system provides sustainable solutions to address:

■ Land Management	■ Energy	■ Water	■ Transportation
☐ Habitat	■ Building Materials	☐ Equity & Inclusion	■ Health & Wellness
☐ Food Access	■ Operations & Maintenance	☐ Emergency & Disaster Prep	☐ Aesthetic

Market Sectors:

■ Residential: Single Family	■ ADU/DADU
■ Residential: Multi-Family (Low-Rise)	☐ Residential: Multi-Family (High-Rise)
☐ Commercial: Office	☐ Commercial: Retail
☐ Hospitality	☐ Institutional: Government
☐ Institutional: Education (University)	☐ Educational: K-12
☐ Arts & Culture	☐ Landscape & Public Realm
☐ Healthcare & Laboratory	☐ Data Facilities
☐ Manufacturing	☐ Transportation
☐ Warehouse	■ Renovation

Certification Levels: 3-Star, 4-Star, 5-Star, Emerald Star (project demonstrates it will achieve net zero energy use & 70% reduction in average water consumption through modeled projections).
Minimum Project Requirements: Fulfill required action items for targeted level of certification.

Certification Process:

1. Enroll project
2. Hire a verifier: track green features, compile documentation & photograph pertinent items
3. Sign checklist, verifier submits certification packet
4. Built Green reviews documentation
5. Certification granted by Built Green *(typically 1 month – 1 year following C of O)*

Other Built Green Rating Systems:

- **Single Family/Townhome** – Applies to single family and townhome projects.
- **Remodel** – Applies to home remodel projects.
- **Communities** – Applies to community-scaled projects.

Glossary:
Eco-Cool Remodel Tool – An online visual tool that provides guidance on how to develop your home remodel project. Provides insight into the green features of a Built Green home.

Resources:
- Built Green Multi-family Handbook (version 2017)
- Built Green Multi-family Checklist (version 2017)
- Built Green Single-family & Townhome Handbook (version 2017)
- Built Green Single-family & Townhome Checklist (version 2017)
- Built Green Remodel Handbook (version 2017)
- Built Green Remodel Checklist (version 2017)

Administrator Contact Information:
builtgreen@mbaks.com
https://www.builtgreen.net/

Salmon-Safe Urban Standards (v2.0)

Founded by: Pacific Rivers

About:

- A certification for lands that prioritize protecting water quality and habitat restoration in Oregon, Washington, California, and British Columbia.
- 95,000 acres of farm and urban lands have been certified.
- Growers & manufacturers that use Salmon-Safe standards can get a label for dairy products, produce, poultry, eggs, meat, and wine.

Most significant shift from "typical":

- Requires project sites to strive towards zero detectable particulates in runoff.

What makes it green? This rating system provides sustainable solutions to address:

■ Land Management	□ Energy	■ Water	■ Transportation
■ Habitat	■ Building Materials	□ Equity & Inclusion	■ Health & Wellness
■ Food Access	■ Operations & Maintenance	□ Emergency & Disaster Prep	□ Aesthetic

Market Sectors:

□ Residential: Single Family	□ ADU/DADU
■ Residential: Multi-Family (Low-Rise)	■ Residential: Multi-Family (High-Rise)
■ Commercial: Office	■ Commercial: Retail
■ Hospitality	■ Institutional: Government
■ Institutional: Education (University)	■ Educational: K-12
■ Arts & Culture	■ Landscape & Public Realm
■ Healthcare & Laboratory	■ Data Facilities
■ Manufacturing	■ Transportation
■ Warehouse	■ Renovation

Certification Levels: Salmon-Safe Certified ***(full compliance or nothing)***

Minimum Project Requirements: Contact Salmon-Safe for eligibility, meet all Core & Context Specific Standards (if the project site has a wetland or stream within the site boundary).

Certification Process:

1. Contact Salmon-Safe for eligibility
2. Preliminary screening is conducted
3. Site assessment and conceptual planning review
4. Salmon-Safe issues Phase 1 Recommendations
5. Submit design and planning documentation related to habitat conditions
6. Salmon-Safe issues Phase 2 Recommendations

7. Upon initial documentation submission, a building can be certified within 5 – 8 weeks *(typically as early as 100% Design Development as a "conditional" certification where the owner must commit to wrapping up specific documentation before the next review period [in 5 years])*

Other Salmon-Safe Rating Systems:

- Salmon-Safe Vineyards
- Salmon-Safe Farms
- Salmon-Safe Corporate & University Campuses
- Salmon-Safe Infrastructure
- Salmon-Safe Parks & Natural Areas
- Salmon-Safe Golf Courses

Glossary:
Wetlands – Areas that are saturated by ground or surface water at a frequency and duration sufficient to support hydric soils and vegetation typically adapted for life in hydric soil conditions. Wetlands are regulated at the federal, state and local levels. - Salmon-Safe Urban Standard (v2.0)

Resources:
Salmon-Safe Urban Standard v2.0 (May 2018)

Administrator Contact Information:
dan@salmonsafe.org
https://salmonsafe.org/get-certified/

PHIUS+ 2015

Administered by: Passive House Institute United States (PHIUS), peer-reviewed by U.S. DOE
Note: PHIUS+ 2018 gets published Sept-Oct 2018.

About:

- Projects that pursue this standard have extremely airtight envelopes, continuous insulation, often triple-paned windows, minimal space conditioning, and optimize natural heating/cooling techniques (e.g. solar).
- Given that this protocol is not just for homes, the term 'passive building' is becoming more commonplace.

Most significant shift from "typical" / WA State Energy Code (WSEC):

- **Air tightness requirement** is five times greater than WSEC. Requires continuous air barriers and a rigorous threshold for the ASTM E779 fan pressure test.
- **Source energy limit** per person – enhanced insulation and windows [e.g. roof assembly target R-81 (WSEC requires R-49). Wall assembly above-grade target R-39 (WSEC stipulates R-21 for wood frame construction), triple paned windows]
- **Strict space conditioning criteria** (newer heating and ventilation systems are typically required to comply (e.g. Energy Recovery Ventilation [ERV]).

What makes it green? This rating system provides sustainable solutions to address:

☐ Land Management	■ Energy	☐ Water	☐ Transportation
☐ Habitat	■ Building Materials	☐ Equity & Inclusion	☐ Health & Wellness
☐ Food Access	☐ Operations & Maintenance	☐ Emergency & Disaster Prep	☐ Aesthetic

Market Sectors:

■ Residential: Single Family	■ ADU/DADU
■ Residential: Multi-Family (Low-Rise)	■ Residential: Multi-Family (High-Rise)
■ Commercial: Office	■ Commercial: Retail
■ Hospitality	■ Institutional: Government
■ Institutional: Education (University)	■ Educational: K-12
■ Arts & Culture	☐ Landscape & Public Realm
■ Healthcare & Laboratory	■ Data Facilities
■ Manufacturing	☐ Transportation
■ Warehouse	■ Renovation

Certification Level(s): PHIUS+ Certified Passive House ***(full compliance or nothing)***

Minimum Project Requirements: MERV 8 filtration required for all ventilation systems, as well as ducted heating/cooling systems. Single family homes must pursue DOE's Zero Energy Ready Home program & ENERGY STAR for Homes.

Certification Process:

1. Conduct pre-process paperwork, sign PHIUS+ certification contract
2. Create project in PHIUS+ Certified Projects Database, project may begin uploading certification documentation
3. Conduct Quality Assurance and Quality Control (QA/QC) on-site verification
4. Explore performance-based incentives via DOE's Zero Energy Ready Home program &ENERGY STAR for Homes.
5. Upload final certification documentation
6. Certification awarded by PHIUS *(typically 3 – 6 months following C of O)*
    a. Note: pre-certification includes: preliminary energy model and SDs/50% DDs (4-6 months review period)

Other PHIUS Rating Systems:

- N/A

Glossary:
Passive Design – design that uses site and climate specific strategies to maintain occupant comfort and optimizes energy performance

Resources:
PHIUS+2015 Passive Building Standard North America – Certification Guidebook v1.1 (March 2017)

Administrator Contact Information:
certification@passivehouse.us
312-561-4588
www.phius.org

Living Building Challenge (v3.1)

Administered by: International Living Future Institute (ILFI)

About:

- Known to be the world's most aspirational green building standard, this protocol encourages projects to strive for closed-loop systems (using only on-site resources).
- Certification is awarded based upon successful performance, after 12 months of continuous occupancy.

Most significant shift from "typical" / WA State Energy Code:

- **Energy Petal** – 105% of the building energy needs* on a net annual basis must be supplied by on-site renewables.
- **Water Petal** – 100% of building water needs* must be sourced on-site. Greywater and blackwater* must be treated on-site.
- **Materials Petal** – All building materials and products* must be vetted for the Red List.

*Exceptions apply

What makes it green? This rating system provides sustainable solutions to address:

- ■ Land Management
- ■ Habitat
- ■ Food Access
- ■ Energy
- ■ Building Materials
- ■ Operations & Maintenance
- ■ Water
- ■ Equity & Inclusion
- ■ Emergency & Disaster Prep
- ■ Transportation
- ■ Health & Wellness
- ■ Aesthetic

Market Sectors:

- ■ Residential: Single Family
- ■ Residential: Multi-Family (Low-Rise)
- ■ Commercial: Office
- ■ Hospitality
- ■ Institutional: Education (University)
- ■ Arts & Culture
- ■ Healthcare & Laboratory
- ■ Manufacturing
- ■ Warehouse
- ■ ADU/DADU
- ■ Residential: Multi-Family (High-Rise)
- ■ Commercial: Retail
- ■ Institutional: Government
- ■ Educational: K-12
- ■ Landscape & Public Realm
- ■ Data Facilities
- □ Transportation
- ■ Renovation

Certification Levels: Zero Energy, Petal (Water, Energy, or Materials emphasis), and Living ***(full compliance or nothing)***

Minimum Project Requirements:

Zero Energy Certification: Combustion is not allowed (some exceptions apply).
Petal & Living Certification: Projects may only be built on previously developed land (some exceptions apply). If pursuing the 'Energy Petal' or 'Living', combustion is not allowed (some exceptions apply).
Imperative 20 Inspiration + Education is also required.

Certification Process:

1. Confirm the project's Living Transect & Imperative 01 Limits to Growth compliance
2. Register the project
3. Compile documentation
4. *Submit preliminary audit documentation
5. After 12 consecutive months of utility bills that proves the project's performance, submit final audit documentation
6. Certification awarded by ILFI if all requirements are met *(typically 3-6 months following C of O for Materials Petal and 14 months-3 years following C of O for Living, Energy, and Water Petal)*

Other ILFI Rating Systems:

- Zero Carbon
- Living Community Challenge
- Living Product Challenge
- Living Food Challenge

Glossary:
Petal – The seven categories that organize the Living Building Challenge program.
Imperative – The seven categories (or "Petals") are further broken into sub-categories called "Imperatives". There is a total of twenty Imperatives.
Living Transect – Inspired by the work of Duany Plater-Zyberk who created the New Urbanism Transect model, the Living Transect is a way to define density and how land is used.
Dialogue - The official online forum to request clarifications and exceptions to certification requirements.
Red List – A list of the 22 worst-in-class chemicals prevalent in the building industry.

Resources:
Living Building Challenge Standard v3.1
Place Petal Handbook v3.1
Water Petal Handbook v3.1
Energy Petal Handbook v3.1
Health & Happiness Petal Handbook v3.1
Materials Petal Handbook v3.1
Equity Petal Handbook v3.1
Beauty Petal Handbook v3.1

Administrator Contact Information:
lbc.support@living-future.org
206-223-2028
https://living-future.org/lbc/

ESDS – Evergreen Sustainable Development Standard (v3.0.1)

Administered by: Washington State Department of Commerce

About:

- Required of all affordable housing projects receiving capital funds from the Washington State Housing Trust Fund.

Most significant shift from "typical" / WA State Energy Code (WSEC):

- Affordable housing multi-family buildings greater than three stories must obtain an additional C406 WA State Energy Code measure or demonstrate an additional 4% reduction in energy use compared to code.
- Affordable housing single family homes, duplexes, townhomes or multi-family buildings under three stories must obtain one additional 2015 WSEC R406.3 Energy Credit or demonstrate an additional 7% reduction in energy use compared to code.

What makes it green? This rating system provides sustainable solutions to address:

- ☐ Land Management
- ☐ Habitat
- ☐ Food Access
- ☐ Energy
- ☐ Building Materials
- ☐ Operations & Maintenance
- ☐ Water
- ☐ Equity & Inclusion
- ☐ Emergency & Disaster Prep
- ☐ Transportation
- ☐ Health & Wellness
- ☐ Aesthetic

Market Sectors:

- ☐ Residential: Single Family
- ☐ Residential: Multi-Family (Low-Rise)
- ☐ Commercial: Office
- ☐ Hospitality
- ☐ Institutional: Education (University)
- ☐ Arts & Culture
- ☐ Healthcare & Laboratory
- ☐ Manufacturing
- ☐ Warehouse
- ☐ ADU/DADU
- ☐ Residential: Multi-Family (High-Rise)
- ☐ Commercial: Retail
- ☐ Institutional: Government
- ☐ Educational: K-12
- ☐ Landscape & Public Realm
- ☐ Data Facilities
- ☐ Transportation
- ☐ Renovation

Certification Levels: ESDS Compliant

Minimum Project Requirements: A minimum of 50 points are required for certification of new construction.

Certification Process:

1. Create Evergreen Application Checklist
2. Housing Trust Fund (HTF) Application review
3. HTF awarded *(typically when the design is complete and prior to breaking)*

4. Evergreen Project Plan approved
5. Coordinate with the Third Party Verifier
6. Third Party Verifier initial oversight
7. Evergreen Binder assembled
8. HTF contract executed, voucher request
9. Project completion - formal compliance awarded *(typically 1-6 months following C of O)*

Other ESDS Rating Systems:

- N/A

Glossary:
Sponsor – The development manager and the property/asset manager of the project.
Evergreen Coordinator – Typically the independent sustainability consultant.
Third Party Verifier – The individual(s) hired by the Department of Commerce who are responsible for conducting on-site inspections to verify compliance with the Evergreen Sustainable Development Standard. See Chapter 2, Section 207.5 of the Housing Trust Fund Handbook for specific requirements of the Third-Party Verifier. - Per page 123 of the ESDS Manual
Evergreen Application Checklist – Project Sponsors are required to submit this checklist when applying to the Housing Trust Fund.

Resources:
Evergreen Sustainable Development Standard v3.0.1 (updated 2/2018)

Administrator Contact Information:
sean.harrington@commerce.wa.gov
360-725-2995
http://www.commerce.wa.gov/building-infrastructure/housing/housing-trust-fund/housing-trust-fund-evergreen-sustainable-development/

Comparative Analysis of LEED, Built Green, & Passive House

FINAL - September 2018

Shoreline Apartments

Image courtesy of VIA Architecture

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Table of Contents

Introduction

When the Shoreline City Council adopted the Climate Action Plan in 2013, they joined King County and other cities in the region by committing to reduce community greenhouse gas emissions 80% by 2050, with an interim target of 50% by 2030. To reduce emissions from new buildings, the City adopted mandatory green building standards in the Mixed-Use Residential (MUR) zoning surrounding two future light rail stations, and a Deep Green Incentive Program to encourage the highest standard for green building citywide.

The Shoreline City Council has directed staff to consider an expansion of the current green building mandate for MUR zoning to also include commercial zoning within the city. This analysis provides a comparison of one code compliant baseline development project against three green building protocols– Built Green 4-Star, Leadership in Energy and Environmental Design (LEED) for Homes Gold, and Passive House Certification. The analysis includes Rough Order of Magnitude (ROM) costs to better understand implications for design and construction, in addition to quantifying environmental performance benefits of the various protocols.

See ***Appendix 1*** *Glossary of Terms* for definitions. A Term included in the Glossary is identified by an underline.

Goals of Study

- Establish a protocol comparison based on a sample project, the **Shoreline Apartments** project at 17233 15th Ave NE, Shoreline, WA.
- Using the sample project, evaluate the following levels of sustainability compliance using the following tools and metrics:
    - **Code Compliance**: 2015 Washington State Energy Code (WSEC) & 2015 Uniform Plumbing Code (UPC) with Washington State Amendments
    - **Prescriptive, point-based green building protocols:**
        - **LEED for Homes Multi-Family Midrise,** Gold: must achieve a minimum **60 points** with a recommended 5-point buffer. See the *LEED for Homes Scorecard* (Appendix 2)
        - **Built Green Multi-Family,** 4-Star: must achieve a minimum **400 points** (**60 points** from Sections 2-5 with a recommended 7-point buffer in each Section). See the *Built Green Scorecard* (Appendix 3).
    - **Performance-based green building protocol:**
        - **Passive House:** not tracked using a scorecard. Compliance approved through on-site verification and building performance. See the *Passive House Strategies List* (Appendix 4).
    - Soft Costs & Hard Costs ROM (Rough Order of Magnitude)
    - Design & Construction Impacts

Executive Summary

This evaluation indicates the following high-level comparison metrics for the pursuit of a code compliant building, LEED for Homes Midrise Gold, Built Green 4-Star and Passive House certification.

Protocol/Approach	Environmental Benefits	ROM Costs to achieve compliance	Significant Design Features & Impacts
Code Compliance	**Baseline:** varies by project	**Sample Building:** **$34.24 million** (construction costs) unknown at this time (soft costs)	*Energy Baseline (code minimum):* Includes two C406 Measures *Water Baseline (code minimum):* Water closets (toilets): **1.6 gpf** (gallons per flush) Showerheads: **2.5 gpm** (gallons per minute) Private lavatory faucets: **2.2 gpm** Kitchen lavatory faucets: **2.2 gpm**

Protocol/Approach	Environmental Benefits	ROM Costs to achieve compliance	Significant Design Features & Impacts
LEED for Homes Multi-Family Midrise Target: Gold	**Energy:** 0-10% ↓ CO_2 emissions annually[1] **Water:** 1.55 million gallons ↓ annually[2] **Health/Materials:** "Building green using LEED… enables us all to live, learn, work and play in environments that enhance human health both indoors and outdoors."[3]	**$275,000-325,000** **0.8 – 0.9%** additional cost[4]	Miscellaneous design and construction adjustments, e.g. design charrette, General Contractor LEED training, 3rd party energy modeling, commissioning, duct leakage testing, blower door testing between each unit.
Built Green Multi-Family Target: 4-Star	**Energy:** 75-85% ↓ CO_2 emissions annually[1] **Water:** 2.08 million gallons ↓ annually[2] **Health/Materials:** "Built Green believes the market can act as a powerful force to improve environmental and health outcomes."[5]	**$600,000-$2,200,000** **1.7 – 6.4%** additional cost[4]	Substantial energy saving design strategies/systems to meet 4-Star prerequisite: 20% better than WA State Energy Code (WSEC). Miscellaneous design and construction adjustments, e.g. 3rd party energy modeling and commissioning.
Passive House	**Energy:** 85-95% ↓ CO_2 emissions annually[1] **Water:** 0 gallons ↓ annually **Health/Materials:** Similarly, to their high comfort standards, Passive House buildings also provide a healthy and quiet indoor environment.[6]	**$960,000-1,700,000** **2.8 – 4.9%** additional cost[4]	Enhanced insulation, triple pane glazing, continuous air barrier, air infiltration. Five times better than the 2015 Washington State Energy Code (WSEC), ERVs (Energy Recovery Ventilators).

[1] Estimates based on the 2015 Washington State Energy Code and transition to all electric systems. Based on 2016 data, Seattle City Light is powered by 92% renewable energy (hydro and wind). Seattle City Light is the City of Shoreline's electricity service provider. seattle.gov/light/Fuel Mix.

[2] Water estimate includes low flow fixtures and excludes process water.

[3] Benjamin, Heather. *LEED Enhances Human Health*. 17 Aug 2017. usgbc.org/articles/leed-enhances-human-health.

[4] Rough order of magnitude calculation based on baseline building valuation of $34.24 million for average construction costs. Protocol increased costs based on both hard costs and soft costs.

[5] Built Green Values, Market Focus: builtgreen.net

[6] International Passive House Association. *What are the benefits of Passive House buildings?* 01 Feb 2017. blog.passivehouse-international.org/benefits-passive-house-buildings

Analysis Assumptions

- **Location:** Project is in the City of Shoreline, density is like the sample project (i.e. projects which do not have density, access to transit, and community resources nearby would need to be evaluated differently).
- **Unit Size:** All residential units are below 1200 square feet**.**
- **Combustion Uses:** Gas fireplace is EPA Certified and installed with doors. Gas hot water heaters are designed and installed with closed combustion.
- **This study has been conducted by selecting credits in each rating system which are:**
    1. **In reference project (sample building)** given the information provided in the 09.20.2017 Permit Submittal Plan Set, as provided by the City of Shoreline. Given the scope of this study and broad applicability to typical project typologies, the baseline building project team was not consulted to verify extrapolations.
    2. **Typical** to design and construction for buildings of this type and within the jurisdiction of the City of Shoreline
    3. **Lowest cost and minimal time impact** to the design, design team, and contractor

Sample Project Data

Basic Information	Systems	Fixtures & Appliances	Cost
Location: Shoreline, WA **Type:** 2 buildings, 5 stories, wood framed construction/post-tension slab **Total gross combined building area:** 200,000 sf **Units:** 243 units | **Lot size:** 1.85 acres **Parking:** 270 spaces, 2 levels below grade parking **WSEC & UPC:** 2015	**Common areas:** Variable Refrigerant Flow (VRF) **Units:** Cove heaters, trickle vents, whole house fans **Domestic hot water:** Gas condensing water heaters	**Toilets:** 1.28 gpf (gallons per flush) **Showers:** 2 gpm (gallons per minute) **Lavatories:** 1.5 gpm **Refrigerators / Dishwashers / Clothes Washers**: ENERGY STAR	**Construction Valuation:** $34.24 M **Soft Costs:** unknown at this time

Green Building Protocol Overview

This section provides a high-level overview of each protocol. (■ - sustainable solutions available in this category, □ - sustainable solutions **not** available in this category)

LEED for Homes Multi-Family Midrise v4

Administered by: US Green Building Council (USGBC) & Green Business Certification Institute (GBCI)

About:

- The most widely used green building rating system in the world.
- Applies to midrise multi-family (four to six stories). LEED for Homes is also applicable to single family homes, low-rise multi-family (one to three stories), and high rise (above 6 stories, with LEED Provider's permission).

Most significant shift from "typical" / WA State Energy Code (WSEC):

- Blower door testing between units
- Energy Prerequisite - 5% improvement over the baseline building performance rating based on ASHRAE Standard 90.1-2010, Appendix G (with errata).

What makes it green? This rating system provides sustainable solutions to address:

■ Land Management	■ Energy	■ Water	■ Transportation
■ Habitat	■ Building Materials	□ Equity & Inclusion	■ Health & Wellness
□ Food Access	■ Operations & Maintenance	□ Emergency & Disaster Prep	□ Aesthetic

Built Green Multi-Family v2017

Administered by: Master Builders Association (MBA) of King and Snohomish Counties

About:

- Local Green Building Program: Developed in partnership with King County, Snohomish County, and other government agencies in Washington State.
- It was originally founded in 1999. Since then, over 32,000 projects have been certified.
- 52% of new homes in Seattle & 32% of new homes in King County were Built Green in 2016.

Most significant shift from "typical" / WA State Energy Code (WSEC):

- Built Green 3-Star requires the building energy model to show 10% better performance than WSEC OR two additional R406/C406 measures.
- Built Green 4-Star requires the building energy model to show 20% better performance than WSEC.

What makes it green? This rating system provides sustainable solutions to address:

■ Land Management	■ Energy	■ Water	■ Transportation
□ Habitat	■ Building Materials	□ Equity & Inclusion	■ Health & Wellness
□ Food Access	■ Operations & Maintenance	□ Emergency & Disaster Prep	□ Aesthetic

PHIUS+ 2015

Administered by: Passive House Institute United States (PHIUS), peer-reviewed by U.S. Department of Energy (DOE)
Note: PHIUS+ 2018 gets published Sept-Oct 2018.

About:

- Projects that pursue this standard have airtight envelopes, continuous insulation, often triple-paned windows, minimal space conditioning, and optimize natural heating/cooling techniques (e.g. passive solar).
- Given that this protocol is not just for homes, the term 'passive building' is becoming more commonplace.

Most significant shift from "typical" / WA State Energy Code (WSEC):

- **Air tightness requirement** is five times greater than WSEC. Requires continuous air barriers and a rigorous threshold for the ASTM E779 fan pressure test.
- **Source energy limit** per person – enhanced insulation and windows [e.g. roof assembly target R-81 (WSEC requires R-49). Wall assembly above-grade target R-39 (WSEC stipulates R-21 for wood frame construction), triple paned windows]
- **Strict space conditioning criteria** (newer heating and ventilation systems are typically required to comply (e.g. Energy Recovery Ventilation [ERV]).

What makes it green? This rating system provides sustainable solutions to address:

☐ Land Management	■ Energy	☐ Water	☐ Transportation
☐ Habitat	■ Building Materials	☐ Equity & Inclusion	☐ Health & Wellness
☐ Food Access	☐ Operations & Maintenance	☐ Emergency & Disaster Prep	☐ Aesthetic

Protocol Comparison: Climate, Ecology & Health

One Star (★) if protocol does not go beyond code requirements or provides minimal opportunity. Maximum five stars (★★★★★) awarded if protocol provides a great opportunity to greatly exceed code or typical practices. *Note: The sample building used in this study may not take advantage of all opportunities to incorporate these comprehensive environmental benefits, based on credits selected to achieve certification threshold.*

Benefit	Code Compliance	LEED for Homes | Gold	Built Green | 4-Star	Passive House
Land Management (Preservation of land)	★	★★	★★★	★
Energy (CO_2 emissions reduction)	★	★ **0-10% CO_2 emissions** reduced / year	★★★ **75-85% CO_2 emissions** reduced / year	★★★★★ **85-95% CO_2 emissions** reduced / year
Water (Potable water reduction)	★	★★ **1.55 million gallons** reduced / year	★★ **2.08 million gallons** reduced / year	★ **0 gallons** reduced / year
Transportation (CO_2 reduction)	★	★★	★★★	★
Habitat (Developing sites that support ecosystems)	★	★★	★	-
Building Materials (Improve indoor air quality & reduce exposure to toxins)	★	★★★	★★★	★★
Building Materials (Local & recycled)	-	★★★★	★★★	-
Equity & Inclusion (Ensure all are welcome & have a voice)	★	★★	★★	★
Health & Wellness (Physical & mental health)	★	★★	★★★	★★
Food Access (Access to healthy food)	-	★	★	-
Operations & Maintenance (Education & stewardship)	★	★★	★★	-
Emergency & Disaster Preparation (Resilience)	★	★	★	★
Aesthetic (Beauty)	-	★	★	-

Protocol Comparison: Costs

Impact	Code Compliance	LEED for Homes | Gold	Built Green | 4-Star	Passive House
Soft Costs	**Baseline:** varies by project *Code does **not** require:* • Facilitate an integrated design process (e.g. all disciplines coordinate efforts at the concept/schematic phase) • Conduct preliminary energy modelling • Ensure the durability of the project (e.g. additional moisture and pest control measures & inspections) • Conduct additional systems inspections • Provide homeowner education	**SUB-TOTAL: $170,000-200,000** • **Registration & Certification**: $10,000 • **LEED On-Site Verification**: $40,000 • IPc1 - Integrated Project Planning: Trades Training: $4,000 • IPc1 - Integrated Project Planning: Design charrette: $6,000 • EAp1 - Energy Modeling: $30,000 • EAp1 - Fundamental Commissioning: $35,000 • EAp1 – Duct leakage, ventilation & exhaust testing: $15,000-$30,000 • EAp3 - O&M + Homeowner Education: $5,000 • MRc1 – Durability Verification: $4,000 • EQp7 - Blower Door Testing & Thermal Enclosure Verification: $15,000 • EQc6 – Garage pressure testing: $5,000	**SUB-TOTAL: $120,000 - $200,000** • **Registration & Certification** ~ $10,000 • Built Green Consulting & Verification: $40,000 • 3.2 – Commissioning: $35,000 • 3.10 – Energy Modeling: $35,000	**SUB-TOTAL: $160,000 - $200,000** • **Registration & Certification**: $30,000 • Passive House Consultant: $50,000 • Commissioning: $35,000 • Passive House Modeling: $45,000
Hard Costs	**Baseline:** varies by project	**SUB-TOTAL: $105,000-125,000** • EQp7 - Potential additional sealing/caulking to meet blower door test threshold: $20,000-40,000 • EQc7 – No Added Urea Formaldehyde (NAUF): $40,000	**SUB-TOTAL: $360,000-$860,000** • 3.10 – Advanced hot water heat recovery: e.g. Sewer thermal heat recovery or heat pumps: $300,000-$800,000 • 5.52 – RECs (Renewable Energy Credits): $10,000	**SUB-TOTAL: $770,000-$1,800,000** • **Air tightness requirement** of 0.05 CFM50 and 0.08 CFM75 per square foot of gross envelope (WSEC requires 0.40 CFM75). Requires continuous air barriers and a rigorous threshold for the ASTM E779 fan pressure test. Advanced sealing measures: General Contractor estimate required.

Impact	Code Compliance	LEED for Homes | Gold	Built Green | 4-Star	Passive House
Hard Costs *Continued*		• IDc4 – 6 EV charging stations: $45,000	• 2.70 – 1 EV charging station: $8,000 • 4.18, 4.19 – No Added Urea Formaldehyde (NAUF): $40,000	• **Source energy limit:** 6200 kWh per person per year • Roof Assembly target R-81 (WSEC stipulates R-49 for in-roof insulation; R-38 for above-deck insulation) • Wall Assembly above-grade target R-39 (WSEC stipulates R-21 for wood frame construction). Requires either deeper studs and/or adding exterior, continuous insulation. • Triple paned windows: $70,000 - $150,000 ($3 - $5/SF) • **Space Conditioning:** Non-standard mechanical systems are typically required to comply (e.g. Energy Recovery Ventilation [ERV], possible heat-pump heating): $700,000-$1,400,000
TOTAL ROM COSTS	Baseline	**TOTAL: $275,000-325,000**	**TOTAL: $480,000-$1,060,000**	**TOTAL: $930,000-2,000,000**
Notable* Design/ Construction Impacts (*not all inclusive)	Baseline (Two 2015 WSEC C406 Measures)	• Design charrette • Trades Training – GC LEED training • Highly reflective roof surface (e.g. TPO) and/or green roof • All plantings 18" from exterior walls • WaterSense certified and low-flow plumbing fixtures –1.75gpm showerheads, 1.5gpm lavatory faucets • ENERGY STAR appliances – dishwasher, clothes washer, refrigerators • Sub-metered irrigation	• **Advanced energy efficiency measures to comply with 20% better than WSEC** • Highly reflective roof surface (e.g. TPO) and/or green roof • TPO or built up bitumen roof to reduce water pollutants • WaterSense certified and Low-flow plumbing fixtures –1.75gpm showerheads, 1.5gpm lavatory faucets, 1.28gpf toilets • ENERGY STAR appliances – dishwasher, clothes washer, refrigerators	• Attention to building geometry – less complicated perimeter (e.g. rectangle or L-shape) will be more efficient for thicker insulation & infiltration mitigation • Enhanced R-value walls and roof • Triple Pane Glazing • Continuous air barrier - reduced air infiltration allowance • Decreased rentable square footage, with thicker envelope if on a zero-lot line project • Mechanical systems sizing will go down compared to typical practice

Impact	Code Compliance	LEED for Homes | Gold	Built Green | 4-Star	Passive House
Notable* Design/ Construction Impacts (*not all inclusive) *Continued*		• ENERGY STAR Portfolio Manager utility tracking • Clothes washers: Steel hose + ¼ turn shut off • Shower/bath: greenboard • All tropical wood – FSC • Aggregate within 100 miles, insulation with 25% recycled content • CO sensors in all spaces adjacent to garage / ductwork outside fire rated envelope of garage (or soffit'ed) • ENERGY STAR plus occupancy sensors, humidistat or timers on all bath fans • Walk-off mats at main entries and all walk-up units • Garage pressure testing • No added urea formaldehyde - NAUF • 14 preferred parking spaces (hybrids) • 6 EV charging stations	• No added urea formaldehyde – NAUF • ENERGY STAR Portfolio Manager utility tracking – energy & water use • 1 EV charging station • Exterior lighting design – meet light pollution requirements	
Number of Projects in Shoreline	Baseline	11	5	0-1

Appendix

1. **Glossary of Terms**
2. **LEED for Homes Scorecard**
3. **Built Green Scorecard**
4. **Passive House Strategies List**

Appendix 1 - Glossary of Terms

Comparative Analysis of LEED, Built Green, & Passive House

Commissioning - the process of verifying, in new construction, all (or some, depending on scope) of the subsystems for mechanical (HVAC), plumbing, electrical, fire/life safety, building envelopes, interior systems, co-generation, utility plants, sustainable systems, lighting, wastewater, controls, and building security to achieve the owner's project requirements as intended by the building owner and as designed by the building architects and engineers.

Energy Recovery Ventilators - the energy recovery process of exchanging the energy contained in normally exhausted building or space air and using it to treat (precondition) the incoming outdoor ventilation air in residential and commercial HVAC systems.

Hard Costs - include expenses *directly* related to the physical construction a building, including tangible assets that you need to acquire to complete your construction project. These costs cover the materials that go into buildings, including cement, drywall, carpet, sod grass; and labor for grading, site excavation, landscaping, and carpentry.

No Added Urea Formaldehyde (NAUF) – refers to products and materials that do not include the permanent adhesive created by the resin of urea and formaldehyde.

Occupancy Sensors - an indoor motion detecting devices used to detect the presence of a person to automatically control lights or temperature or ventilation systems.

Rough Order of Magnitude (ROM) - an estimation of a project's level of effort and cost to complete. A ROM estimate takes place very early in a project's life cycle — during the project selection and approval period and prior to project initiation in most cases.

Soft Costs - include expenses *indirectly* related to construction of a building. Soft costs include architectural, engineering, financing, and legal fees, and other pre- and post-construction expenses.

Thermoplastic Polyolefin (TPO) - refers to polymer/filler blends usually consisting of some fraction of a thermoplastic, an elastomer or rubber, and usually a filler. Outdoor applications such as roofing frequently contain TPO because it does not degrade under solar UV radiation, a common problem with nylons.

Walk-off Mats - used to describe an entire category of commercial floor mats that either scrape or wipe debris from the under soles of shoes.

LEED for Homes V4 Midrise Project Checklist | 07.25.2018 | Project Goal: Gold

☐ - Known additional cost from baseline

Appendix 2

RUSHING

Yes	Likely	Unlikely	No	
65	7	31	12	**PROJECT TOTALS | pre-certification estimates**

Certification Thresholds: Certified 40 points Silver 50 points Gold 60 points Platinum 80+

Yes	Likely	Unlikely	No			Max. Points
2	0	0	0	**Integrated Design**		2
2				Credit 1	**Integrated Project Planning**	2

Yes	Likely	Unlikely	No			Max. Points
14	0.5	0.5	0	**Location and Transportation**		15
Y				Prereq 1	**Floodplain Avoidance**	Req'd
8			-	Credit 1	**Site Selection**	8
3				Credit 2	**Compact Development**	3
1.5	0.5			Credit 3	**Community Resources**	2
1.5		0.5		Credit 4	**Access to Transit**	2

Yes	Likely	Unlikely	No			Max. Points
4	0	3	0	**Sustainable Sites**		7
Y				Prereq 1	**Construction Activity Pollution Prevention**	Req'd
Y				Prereq 2	**No Invasive Plants**	Req'd
2				Credit 1	**Heat Island Reduction**	2
		3		Credit 2	**Rainwater Management**	3
2				Credit 3	**Non-Toxic Pest Control**	2

Yes	Likely	Unlikely	No			Max. Points
7	1	2	0	**Water Efficiency**		10
Y				Prereq 1	**Water Metering**	Req'd
3	1	2		Credit 1	**Indoor Water Use**	6
4				Credit 2	**Outdoor Water Use**	4

Yes	Likely	Unlikely	No			Max. Points
19	2	15	4	**Energy and Atmosphere**		37
Y				Prereq 1	**Minimum Energy Performance**	Req'd
Y				Prereq 2	**Energy Metering**	Req'd
Y				Prereq 3	**Education of the Homeowner, Tenant or Bldg Manager**	Req'd
17	2	8	4	Credit 1	**Annual Energy Use**	30
		7		Credit 2	**Efficient Hot Water Distribution**	5
2				Credit 3	**Advanced Utility Tracking**	2

Yes	Likely	Unlikely	No			Max. Points
4	0	1	6	**Materials and Resources**		9
Y				Prereq 1	**Certified Tropical Wood**	Req'd
Y				Prereq 2	**Durability Management**	Req'd
1				Credit 1	**Durability Management Verification**	1
1		1	5	Credit 2	**Environmentally Preferable Products**	5
2			1	Credit 3	**Construction Waste Management**	3

Yes	Likely	Unlikely	No			Max. Points
10.0	0	7.5	1.5	**Indoor Environmental Quality**		18
Y				Prereq 1	**Ventilation**	Req'd
Y				Prereq 2	**Combustion Venting**	Req'd
Y				Prereq 3	**Garage Pollutant Protection**	Req'd
Y				Prereq 4	**Radon-Resistant Construction**	Req'd
Y				Prereq 5	**Air Filtering**	Req'd
Y				Prereq 6	**Environmental Tobacco Smoke**	Req'd
Y				Prereq 7	**Compartmentalization**	Req'd
1		2		Credit 1	**Enhanced Ventilation**	3
1		0.5	1.5	Credit 2	**Contaminant Control**	2
1		2		Credit 3	**Balancing of Heating and Cooling Distribution Systems**	3
		3		Credit 4	**Enhanced Compartmentalization**	3
2				Credit 5	**Enhanced Combustion Venting**	2
1				Credit 6	**Enhanced Garage Pollutant Protection**	1
3				Credit 7	**Low Emitting Products**	3
1				Credit 8	**No Environmental Tobacco Smoke**	1

Yes	Likely	Unlikely	No			Max. Points
3	3	0	0	**Innovation**		6
Y				Prereq 1	**Preliminary Rating**	Req'd
1				Credit 1	**Exemp Perf - LTc2.5 Bike Storage & Network**	1
1				Credit 1	**Exemp Perf - Design Charrette or Trades Training**	1
	1			Credit 1	**Pilot Credit - Food Production (3800sf on roof)**	1
1				Credit 1	**Innovation Credit - Green Vehicles or alternative**	1
	1			Credit 1	**Green Power and Carbon Offsets**	1
	1			Credit 2	**LEED AP Homes**	1

Yes	Likely	Unlikely	No			Max. Points
2	0	2	0	**Regional Priority**		4
		1		Credit 1	**SSc3 Nontoxic Pest Control**	1
1				Credit 2	**WEc2 Outdoor Water Use**	1
1				Credit 3	**EAc1 Annual Energy Use**	1
	-			Credit 4	**MRc3 Construction Waste Management**	1
		1		Credit 5	**EQc1 Enhanced Ventilation**	1

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Appendix 3

Please indicate:

☒ **Preliminary checklist** (for own or verifier's use)

☐ **Final checklist** (for certification review)

Multi-Family Residential New Construction Certification Checklist

Company Name	City of Shoreline Apartments - analysis of the potential for Built Green 4-Star Certification
Project Address	Baseline Building - 17233 15th Ave NE, Shoreline, WA
Number of Units	243

Last updated March 13, 2018

REQUIRED CREDITS

Action Item No.	Possible Points	Credit	Total Points	Comments
THREE-STAR REQUIREMENTS (300 points minimum)				
	required	Built Green assumes building meets local code regulations	★	*GOOD*
	required	Third-party verification	★	Sustainability consultant fulfills requirements
	required	Achieve a minimum of 50 points from sections 2-5	★	*IN PROGRESS*
Energy	*required*	All spot exhaust fans must be ENERGY STAR (See Action Item 3-50)	★	*GOOD - LIKELY IN BASELINE BLDG*
Energy	*required*	Install ENERGY STAR refrigerators, dishwashers and clothes washers (if provided by builder) (See Action Items 3-42, 3-47, 3-48)	★	*GOOD - IN BASELINE BLDG*
Energy	*required*	Ventilation system flow rates are tested and within 20% of design flows. Controls and settings are consistent with design	★	IN PROGRESS
Energy	*required*	Building modeled to have 10% better performance than the Washington State Energy Code cycle under which the project is permitted OR achieves additional credits in Section R406 (two credits) or C406 (two options) (above the WSEC requirements) (See Action Items 3-1 and 3-2)	★	IN PROGRESS
IAQ	*required*	Use only low-VOC/low-toxic interior paints, primers, and finishes for ALL surface areas (See Action Item 4-15)	★	*GOOD - LIKELY IN BASELINE BLDG*
IAQ	*required*	Do not install a wood-burning fireplace inside unit or building	★	*GOOD*
Materials	*required*	Post jobsite recycling plan on site and maintain at least two bins (one for waste, one for recyclables)	★	*GOOD - LIKELY IN BASELINE BLDG*
Materials	*required*	Recycle all clean wood, cardboard, new gypsum scrap, metal, asphalt paving/brick/concrete, electronics, and batteries (See Action Item 5-6, 5-25)	★	*GOOD - LIKELY IN BASELINE BLDG*
Materials	*required*	Use no endangered species or old growth wood (See Action Item 5-36)	★	*GOOD - LIKELY IN BASELINE BLDG*
FOUR-STAR REQUIREMENTS (400 points minimum)				
	required	Meet 3-Star requirements	★	IN PROGRESS
	required	Achieve a minimum of 60 points from sections 2-5	★	IN PROGRESS
Site & Water	*required*	Amend disturbed soil with compost to a depth of min. 10 inches to restore soil environmental functions (See Action Item 2-16)	★	*GOOD - LIKELY IN BASELINE BLDG*
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 2-41)	★	*GOOD - LIKELY IN BASELINE BLDG*
Site & Water	*required*	Install ALL bathroom faucets with gpm 1.5 or less, must be WasterSense labelled	★	*NOT IN BASELINE PROJECT*
Site & Water	*required*	Install ALL showerheads with 1.75 gpm or less, must be WaterSense labelled (See Action Item 2-50)	★	*NOT IN BASELINE PROJECT*
Site & Water	*required*	Install ALL toilets with 1.28 gpf or less average flush rate, must be WasterSense labelled (See Action Item 2-54)	★	*NOT IN BASELINE PROJECT*
Energy	*required*	Building modeled to have 20% better performance than the Washington State Energy Code cycle under which the project is permitted (See Action Item 3-1)	★	IN PROGRESS
Energy	*required*	Set up automatic energy benchmarking in Portfolio Manager and share data with Built Green	★	*GOOD - LIKELY IN BASELINE BLDG*
Energy	*required*	Design for solar readiness (See handbook for details)	★	*GOOD - LIKELY IN BASELINE BLDG*
Energy	*required*	80% of installed lighting shall be high efficacy AND listed on an approved "Qualified Products List" (See Action Item 3-40)	★	*NOT IN BASELINE PROJECT*
IAQ	*required*	Provide track-off mats, carpets, and/or shoe grates at principle entryways to building (See Action Item 4-69)	★	*NOT IN BASELINE PROJECT*
IAQ	*required*	Use CARB II and/or NAUF composite wood products for indoor applications	★	*NOT IN BASELINE PROJECT*
IAQ	*required*	Provide range exhaust hood directly over cooking appliance. Exhaust hood shall vent directly to the exterior of the building. General kitchen exhaust or recirculating hoods shall not meet this requirement.	★	*GOOD - LIKELY IN BASELINE BLDG*
Materials	*required*	Achieve minimum recycling rate of 50% by weight (See Action Items 5-13 through 5-29)	★	*GOOD - LIKELY IN BASELINE BLDG*

FIVE-STAR REQUIREMENTS (600 points minimum)				
	required	Meet 4-Star requirements	★	
	required	Achieve a minimum of 90 points from sections 2-5	★	
Site & Water	*required*	Install ALL bathroom faucets with gpm 1.0 or less, must be WaterSense labelled (See Action Item 2-48)	★	
Site & Water	*required*	Install ALL showerheads with gpm 1.5 or less, must be WasterSense labelled (See Action Item 2-50)	★	
Site & Water	*required*	Install ALL toilets with 1.1 gpf or less average flush rate, must be WaterSense labelled (See Action Item 2-54)	★	
Site & Water	*required*	Manage 50% of stormwater on site	★	
Energy	*required*	Building modeled to have 30% better performance than the Washington State Energy Code cycle under which the project is permitted (See Action Item 3-1)	★	
Energy	*required*	Install solar PV producing 150 kWh for every 1000 sq ft OR install solar hot water producing 500 kBtu for every 1000 sq ft (See Action Items 3-54 and 3-55)	★	
IAQ	*required*	All hard surface flooring must contain no orthophthalates (See Action Item 4-22)	★	
IAQ	*required*	All carpet must contain no fly ash (See Action Item 4-26)	★	
Materials	*required*	Achieve a minimum recycling rate of 90% of waste by weight	★	

NET ZERO ENERGY LABEL (OPTIONAL)				
	required	Meet any star-level requirements plus point minimum	★	
Energy	*required*	Demonstrate net zero energy performance over the course of a year	★	
Energy	*required*	Provide an energy performance disclosure waiver	★	

Check items included this project to qualify for a BUILT GREEN star rating. **2017 version**

QUALIFYING CREDITS

Action Item No.	Possible Points	Credits	Total Points	Comments
SECTION 1: BUILT GREEN TEAM				
1-1	1-10	Use Built Green member subcontractors, vendors, service providers, and real estate agents		
1-2	5	a) Incorporate Built Green early in the design by conducting an eco-charrette with the development team and owner to determine Built Green features to be included in the project b) Identify team member roles and how they relate to various phases of green lot design, prep and development c) Create a mission statement that includes the project's goals and objectives		
1-3	1	Provide all documentation/copies to third-party verifier electronically	1	
		BUILT GREEN TEAM SECTION TOTALS	**1**	
SECTION 2: SITE & WATER				
SITE PROTECTION				
Overall				
2-1	10	Build on an infill lot to take advantage of existing infrastructure and reduce development of virgin sites	10	
2-2	10	Build in a planned Built Green development or certified Built Green Community		
2-3	20	Build on a greyfield or brownfield site	20	
2-4	30	Create a Low Impact Development as defined in handbook		
2-5	5-25	Meet or exceed City of Seattle's Green Factor standards (point tiers in handbook)		NA for projects outside of Seattle
2-6	1-5	Bonus points: Use of Green Factor where it is not part of the project's jurisdictional development requirements	3	LIKELY, LA to do calc
2-7	20	For each acre of development, set aside an equal amount of land as a conservation easement or transfer of development rights		
		Subtotal	**33**	
Protect Site's Natural Features				
2-8	3	Avoid soil compaction by limiting heavy equipment use to building footprint and construction entrance		
2-9	3	Preserve existing native vegetation as landscaping (min. 25% preserved)		
2-10	1-5	Retain trees on site (1 pt per 20% preserved)		
2-11	10 or 12 or 15	Restore percentage of site outside the footprint for the life of the building (10%, 20%, 30%)		
		Subtotal	**0**	
Protect Natural Processes On-Site				
2-12	2	Install and maintain temporary erosion control devices that significantly reduce sediment discharge from the site beyond code requirements		
2-13	3	Use compost to stabilize disturbed slopes during construction		
2-14	2 or 5	Retain all native topsoil in-situ, or stockpile and protect from erosion	2	
2-15	3	Balance cut and fill, while minimizing change to original topography		
2-16	4	Amend disturbed soil with compost to a depth of min. 10 inches to restore soil environmental functions	4	
2-17	2	Replant or donate removed vegetation for immediate reuse		
2-18	2	Use plants salvaged from another site		
2-19	3	Grind land clearing wood and stumps for reuse on site		
2-20	10 or 20 or 30	Manage specified percentage of stormwater from roof and site on site by 60%, 80%, or 100%		
		Subtotal	**6**	

Hardscapes				
2-21	5 or 10 or 15	Design to achieve 50%, 75%, or 90% effective pervious surface outside of building footprint		
2-22	10 or 15 or 25	Install vegetated roof system (e.g. green roof) to reduce impervious surface on 25%, 50%, or 90%+ of total roof surface		
2-23	1	Integrate landscaping with parking area beyond code		
		Subtotal	**0**	
Reduce Urban Heat Island Effect				
2-24	5	Install an ENERGY STAR Qualified roof	5	
2-25	5	Provide shading for 30% of hardscapes by using landscape, landscape features, or overhangs		
2-26	5	For all exterior hardscape, including surface parking, use only light-colored pavement for 90% of project area (Solar Reflective Index of .28 or better)		
		Subtotal	**5**	
Eliminate Water Pollutants				
2-27	1	Wash out concrete trucks in slab or pavement subbase areas, or use washout boxes		
2-28	3	Establish and post clean up procedures for spills to prevent illegal discharges	3	
2-29	1	Reduce hazardous waste through good jobsite housekeeping	1	
2-30	2	Construct tire wash, establish and post clean up protocol for use		
2-31	2	Use slow release organic fertilizers to establish vegetation	2	LIKELY
2-32	2	Use less toxic form release agent	2	LIKELY
2-33	8-10	Use non-toxic (10 pts) or low-toxic (8 pts) outdoor materials for all landscaping	8	LIKELY
2-34	5	Use only “Low Hazard” pesticides and herbicides for landscape installation and in Operations & Maintenance Plan		
2-35	5	Do not use galvanized metal, EPDM, or PVC roofing materials		
2-36	2	Use a modified bitumen built-up or TPO membrane roof	2	
2-37	5	No clearing or grading during wet weather periods (November - April)		
2-38	40 or 50	On-site wastewater treatment for greywater only (40 pts) or for blackwater and greywater (50 pts), min. 50% captured		
		Subtotal	**18**	
WATER CONSERVATION				
Outdoor Conservation				
2-39	2	Mulch landscape beds with 4 inches of organic mulch	2	
2-40	3-12	Limit use of turf grass, or use no turf grass (3 pts per 25%)	9	
2-41	5	Landscape with plants appropriate for site topography and soil types, emphasizing use of plants with low watering requirements (drought tolerant)	5	
2-42	2	Install sub-surface or drip systems for irrigation with controls for each zone, including weather or soil moisture-based modulation	2	
2-43	5	Install a WaterSense irrigation system		
2-44	3	Irrigation system commissioned by a professional to ensure no leaks, efficient system		
2-45	10	Install landscaping that requires no potable water for irrigation whatsoever after initial establishment period (approximately 2 years)		
2-46	5-20	Install rainwater collection system (cistern) that reduces water consumption for irrigation (5 pts for each 25% of irrigation needs met by cistern)		
2-47	50	Provide 100% of building and landscaping water use with captured precipitation or reused water purified without the use of chemicals		
		Subtotal	**18**	
Indoor Conservation				
2-48	1-3	Install ALL bathroom faucets with 1.0 gpm (1 pt), 0.5 gpm or less (3 pts), must be WaterSense labelled		
2-49	3	Install ALL kitchen faucets with 1.8 gpm or less	3	
2-50	5-7	Install ALL showerheads with 1.75 gpm (5 pts), 1.5 gpm or less (7 pts), must be WaterSense labelled	5	1.75 gpm showerheads & WaterSense- NOT IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
2-51	10	Stub-in plumbing to use greywater for toilet flushing (must test for leaks)		
2-52	20	Use greywater or rainwater for toilet flushing		
2-53	3	Provide water sub-metering for each unit	3	
2-54	4-12	Install WaterSense labelled toilets (1.28 gpf = 4 pts, 1.1 gpf = 8 pts, 0.8 gpf = 12 pts. All toilets must comply.)	4	1.28 gpf toilets & WaterSense - NOT IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
2-55	4	Install no-cartridge waterless urinals or 1/8 gallon urinals and 1.28 gpf maximum (WaterSense if not flushometer) toilets in all common areas		
2-56	3-5	Limit pipe volume between water heat source and furthest fixture. Pipe run should store no more than than 0.5 gallons (3 pts) or 0.3 gallons (5 pts)		
		Subtotal	**15**	
Eliminate Water Pollutants				
2-57	1	Do not install garbage disposal		
		Subtotal	**0**	
DESIGN ALTERNATIVES				
2-58	10	Follow comprehensive integrated design plan for site and structure (as described in the handbook)		
2-59	5	Provide community common areas accessible to all building occupants	5	
2-60	2	Take advantage of parking reduction credits that are available in your jurisdiction		
2-61	5 or 10	Provide structured parking within the proposed building footprint at a 50% minimum or 100%	10	
		Subtotal	**15**	

TRANSPORTATION				
2-62	15	Create a Transit-Oriented Development		
2-63	4	Build within ¼ miles of a transit stop or Park and Ride	4	
2-64	15	Create a mixed-use building	15	NOT IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
2-65	6-10	Provide subsidized bus passes (25% or 50% subsidized)		
2-66	2	Provide bicycle lockers or bicycle storage beyond code		
2-67	2	Provide bus shelters		
2-68	6-12	Provide dedicated parking spots for carpool or car-share vehicles (6 pts for first stall above code, 2 pts for each additional)		
2-69	2	Provide a link to community trails		
2-70	5-20	Provide EV charging station (5 pts for one station, 3 pts for each additional)	5	
		Subtotal	**24**	
BENCHMARKING				
2-71	5	Commit to annual benchmarking of building water consumption using ENERGY STAR Portfolio Manager and to sharing this information with Built Green	5	
2-72	7	Install a prominent water use display in high traffic common area		
		Subtotal	**5**	
EXTRA CREDIT/INNOVATION for Site and Water				
2-73	1-10	Extra credit / innovation for Site and Water		
		Subtotal	**0**	
		SITE & WATER TOTAL	**139**	

SECTION 3: ENERGY				
ENERGY IMPROVEMENT				
3-1	1-70	Document energy improvements beyond code using approved energy modeling software (1 pt per % improvement above code)	20	HOLD FOR NOW - 20 pt automatically w 4-star 20% better perforamance modelled req'd
3-2	1-20	Document building improvements beyond code using a prescriptive approach (see handbook for how to calculate points)		HOLD FOR NOW
3-3	50	Bonus points: build a net zero energy building that draws zero outside power or fuel on a net annual basis		
		Subtotal	**20**	
SYSTEMS COMMISSIONING				
3-4	5 or 10 or 15	Provide Fundamental Commissioning of building systems (see handbook for point tiers)	10	
		Subtotal	**10**	
AIR SEALING				
3-5	3	Airtight drywall approach for framed structures		
3-6	10	Use airtight building method, such as SIP or ICF for all walls		
3-7	3	Eliminate or airtight seal all air pathways between floors and units		
3-8	5	Use a dense packed blown-in wall insulation system		
3-9	5 or 10 or 15	Conduct blower door test for the whole building with results better than base code requirement (see handbook for point tiers)		
		Subtotal	**0**	
PASSIVE DESIGN FEATURES				
3-10	6 or 12	Passive solar: three of the below strategies (6 pts), or five (12 pts)		
3-10a		East/west orientation		
3-10b		Optimal glazing - majority within 22 degrees of due south		
3-10c		Proper overhang sizing		
3-10d		Glazing with Solar Heat Gain Coefficient of less than .40		
3-10e		Natural shading on south side (trees)		
3-11	7	Model solar design features using approved modeling software		
3-12	2	Operable window area greater than code		
		Subtotal	**0**	
HEATING/COOLING				
Distribution				
3-13	3	Install ENERGY STAR ceiling fans in all units - minimum one per unit	3	
3-14	5 or 10	Third-party total duct leakage performance test (see handbook for point tiers)		
3-15	2	All ducts are in conditioned space	2	
3-16	3	Locate heating/cooling equipment inside the conditioned space		
		Subtotal	**5**	
Controls				
3-17	2	Install programmable thermostats for all individual heating zones	2	
3-18	1	Provide separate switching for bathrooms fan/heat lamp and fan/light combination fixtures	1	*GOOD - LIKELY IN BASELINE BLDG*
3-19	3	Provide electricity and/or natural gas direct metering for each unit	3	
3-20	5	Install heat systems with separate zones for sleeping and living areas (not including electric resistance heating)		
3-21	3	Black or smart switches in all units for turning off associated outlets		
		Subtotal	**6**	
Heat Recovery				
3-22	5 or 10	Install a heat recovery ventilator (HRV) or an energy recovery ventilator (ERV)		
3-23	10	If HRV or ERV installed, commission and make sure system is balanced, includes fan power		
		Subtotal	**0**	

Space Heating/Cooling Equipment				
3-24	3 or 5 or 8	Select heat pumps with performance better than ENERGY STAR (see handbook for point tiers)		
3-25	2-4	Select heating system efficiency (natural gas): 96% AFUE (2 pts) or 96% AFUE + Variable Speed/ECM blower motor (4 pts)	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
3-26	3	Select ENERGY STAR heating/cooling equipment		
3-27	2	No gas fireplaces, or use direct vent gas or propane hearth product (AFUE rating)	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
3-28	5	Do not install infrastructure for temporary/portable air conditioners	5	
		Subtotal	**9**	
WATER HEATING				
Overall				
3-29	5	Install drainwater heat recovery system (DHR)		
3-30	2	Install whole building "smart" variable-speed recirculation pump		
3-31	2 or 4	Install ultra-high efficiency central (gas) water heater with 92% (2 pts) or 96% (4 pts) thermal efficiency	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
3-32	2	Install the water heater inside the heated space (electric, direct vent, or sealed venting only)	2	
3-33	8	Install one or more Heat Pump Water Heaters with EF 2.0 or greater		
3-34	25	Install a centralized Heat Pump or Reverse Cycle Chiller to heat the domestic hot water		
		Subtotal	**4**	
Distribution				
3-35	10	Insulate all hot water recirculation lines		
3-36	1	Install heat traps on cold inlet pipes at hot water storage tank		
		Subtotal	**0**	
LIGHTING				
Natural Light				
3-37	1	Light-colored interior finishes	1	
		Subtotal	**1**	
Efficient Lighting				
3-38	1-2	Install lighting dimmer, photo cells, timers, and/or motion detectors for high efficiency fixtures - common areas and in-unit lighting		
3-39	2	Install motion detectors for minimum 90% of exterior fixtures		
3-40	2 or 5 or 7	Install high efficacy lighting that is listed on an approved "Qualified Products List" (see handbook for point tiers)		
3-41	5	Avoid excessive outdoor light levels while maintaining adequate light for security and safe access, meet IESNA Levels	5	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
		Subtotal	**5**	
APPLIANCES				
3-42	2	Install ENERGY STAR clothes washers in all units	2	IN BASELINE PROJECT
3-43	3	Install ENERGY STAR clothes washers in common laundry facilities instead of in each unit		
3-44	1	Install ENERGY STAR clothes dryers in all units		
3-45	2	Install ENERGY STAR clothes dryers in common laundry facilities instead of in each unit		
3-46	5	Provide clotheslines to each tenant and "wet room" or outside space in unit or common area for hang drying clothes		
3-47	1	Install an ENERGY STAR dishwasher in all units	1	IN BASELINE PROJECT
3-48	2 or 4	Install ENERGY STAR, or better, refrigerator in all units	2	IN BASELINE PROJECT
3-49	2	Install induction cooktop in all units	2	IN BASELINE PROJECT
3-50	2	Install ENERGY STAR exhaust fans in all units, with fan sone rating of 0.3 or less at or above the design CFM		
		Subtotal	**7**	
ALTERNATIVE ENERGY				
3-51	7	Participate in the local utility's electricity program for renewable electricity sources (covers minimum 25% of energy used)		
3-52	4	Develop incentive program for tenants to purchase Green-e certified RECs		
3-53	1	Solar-powered or low-voltage walkway or outdoor area lighting		
3-54	5-25	Install photovoltaic system (excluding solar hot water): 5 pts for 300 W/1000 sq ft and 5 pts for each additional 150 W/1000 sq ft.		
3-55	5-25	Install solar thermal for space heating or hot water: 5 pts for 1000 kBtu/1000 sq ft and 5 pts for each additional 500 kBtu/1000 sq ft		
		Subtotal	**0**	
BENCHMARKING				
3-56	5	Include provisions in tenant leases releasing utility consumption and billing data to building owner and authorized agents		
3-57	10	Commit to performing a post-occupancy comparison of modeled vs. actual energy performance and to sharing with Built Green		
		Subtotal	**0**	
EXTRA CREDIT/INNOVATION for Energy				
3-58	1--10	Extra credit / innovation for Energy		
		Subtotal	**0**	
		ENERGY TOTAL	**67**	

SECTION 4: HEALTH & INDOOR AIR QUALITY				
OVERALL				
4-1	5	Builder or architect certified to have taken a minimum 8 hour IAQ training approved by Program Manager		
4-2	15	Certify building under an IAQ program approved by Program Manager		
4-3	1	Building is designated non-smoking	1	
		Subtotal	**1**	

JOBSITE OPERATIONS				
4-4	1	Use less-toxic cleaners	1	
4-5	1	Require workers to use VOC-safe masks when applying VOC containing wet products and N-95 dust masks when generating dust	1	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-6	1-5	Take measures during construction operations to avoid moisture problems later (see handbook for examples; 1 pt per action)	5	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-7	2-4	Take measures to avoid problems due to construction dust (see handbook for point tiers)	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-8	3	Ventilate during all new wet finish applications	3	
4-9	2	No use of unvented combustion heaters during construction	2	
4-10	3	Clean duct, furnace, and filter thoroughly before occupancy	3	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-11	3	Institute a jobsite anti-idling program for construction vehicles	3	
4-12	3-12	Use non-diesel alternative fuels in construction equipment: electricity, propane, or natural gas (3 pts per 25% of equipment using alternative fuels)		
4-13	4	Require healthy jobsite plan for workers' compliance	4	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-14	4	Implement construction management plan to ensure healthy jobsite plan is implemented optimally and adhered to	4	
		Subtotal	**28**	
LAYOUT AND MATERIAL SELECTION				
4-15		Inside the building envelope use only low-VOC products for various applications when wet-applied on site:		
4-15a	2	Tiling	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-15b	2	Framing	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-15c	4	Flooring	4	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-15d	4	Plumbing	4	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-15e	2	HVAC	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-15f	2	Insulating	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-15g	2	Drywalling	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-16	3	Use urea formaldehyde-free insulation or Greenguard Gold certified insulation product	3	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-17	1	Do not install insulation or carpet padding that contains brominated flame retardant (BFR)		
4-18	3	Use plywood and composites of exterior grade that is NAF, NAUF, or ULEF (for interior use)	3	
4-19	5	Use only shelving, window trim, door trim, base molding, etc., that is NAF, NAUF, or ULEF	5	
4-20	5	Install cabinets made with board that is NAF, NAUF, or ULEF and has low-toxic finish		
4-21	1	Use pre-finished flooring		
4-22	5	Use hard surface flooring without orthophthalate plasticizers		
4-23	10	No carpet in units		
4-24	2	Limit use of carpet to one-third of unit's square footage	2	
4-25	1	If installing carpet system (carpet, pad, and adhesive), specify and use CRI Green Label Plus or Greenguard certified products	1	
4-26	5	If installing carpet system (carpet, pad, and adhesive), specify and use carpet that does not contain fly ash filler in backing		
4-27	1	If using carpet, install by dry method		
4-28	1	Install low pile or less allergen-attracting carpet and pad	1	
4-29	2	Install untreated natural fiber carpet		
4-30	1	Avoid carpet in environments where it can get wet (kitchen, bathroom, near entries)	1	
4-31	50	Select materials such that the building is free from all of the materials and chemicals listed in the handbook. Please discuss with Program Manager before claiming this point		
		Subtotal	**34**	
MOISTURE CONTROL				
Overall				
4-32	5	Use Building Envelope Consultant during design		
4-33	5	Envelope inspection at various stages of envelope installation by a qualified professional		
4-34	1	Grade to drain away from buildings	1	
		Subtotal	**1**	
Roof				
4-35	6 or 10	Provide 2:12 (9.5 degree) pitch sloped roof surface -for at least 50% of roof (6 pts), or 100% (10 pts)		
		Subtotal	**0**	

Walls - Above Grade				
4-36	3	Provide continuous air- and weather resistive barrier installed to manufacturer's requirements		
4-37	3	Use prefabricated, liquid applied, or self-adhering flashing at siding transitions and penetrations		
4-38	6	Install rainscreen siding		
4-39	3	In wood-framed structures, use low-toxic mold-inhibitor product		
		Subtotal	**0**	
Below Grade				
4-40	3	For slab on grade, use 10 mil polyethylene vapor barrier or equivalent performance, directly under slab	3	
4-41	2	Perform moisture test for any slab on grade prior to installing any finish to manufacturer's specifications		
4-42	2	Install mechanical ventilation system to control moisture in crawl space		
4-43	1	Install a rigid perforated footing drain at foundation perimeter, not connected to roof drain system	1	
4-44	3	Install moisture management system for below grade walls beyond code, i.e., drainage mat	3	
		Subtotal	**7**	
Openings				
4-45	1	Properly seal building openings and penetrations against moisture and air leaks	1	
4-46		Install additional moisture control measures:		
4-46a	5	sill pans with back dams or slope at windows	5	
4-46b	3	door pans with back dams at doors	3	
4-46c	5	sill flashing extending up sides of windows	5	
4-46d	3	threshold protection at doors	3	
4-46e	1	metal head flashing at windows	1	
4-46f	1	metal head flashing at doors	1	
4-46g	1	min. 18" overhangs at entryways	1	
4-47	3	Provide hose testing or negative pressurization testing to pre-installed sample of each window type to test assembly for moisture control protection - ASTM E1105 or equal		
		Subtotal	**20**	
AIR DISTRIBUTION AND FILTRATION				
4-48	2	No stud or joist cavities used for air conveyance	2	
4-49	2	Do not install electronic, metal mesh, horse hair, or non-pleated fiberglass filters		
4-50	1	Make sure air intakes are placed to avoid intake from air pollutant sources (beyond code)		
4-51	1	No parking within 40 feet of building air intakes	1	
4-52	2 or 5	Use effective media air filter, ensuring the HVAC system is designed for the static pressure drop of the filter: MERV 8 (2 pts) or MERV 12+ (5 pts)	2	
4-53	2	Install operable windows in all occupied spaces, minimum 4% of floor area		
4-54	2	Install CO_2 detectors in community rooms		
4-55	2	Demand controlled ventilation in all rooms designed for high occupancy		
4-56	10	Utilize a balanced ventilation approach (supply + exhaust/return) in residential units		
		Subtotal	**5**	
HVAC EQUIPMENT				
4-57	1	Design to ensure accessibility of all system components	1	
4-58	1	Design to prevent standing water in ducted HVAC systems	1	
4-59	3	Commission all spot ventilation fans in all units		
4-60	1	Use heating system controls that are free of mercury	1	
4-61	1	Range exhaust hoods shall be ENERGY STAR rated and have a maximum flow rate less than or equal to 300 cfm		
4-62	2	Install an automatic fan control with 20-minute delay timer, motion sensor, or humidistat for bath exhaust fans	2	
4-63	2	Install quiet bath exhaust fan with smooth ducting, minimum 4 inch, with a fan sone rating of .3 or less at or above the design CFM		
4-64	1	No sound insulation or other fibrous materials installed inside ducting		
4-65	3	Install sealed combustion heating and hot water equipment	3	
4-66	3 or 5	Compartmentalization testing of sampling of units (see handbook for point tiers)		
		Subtotal	**8**	
HEALTH AND INDOOR AIR QUALITY				
4-67	1	Install biodegradable carbon filter at sink		
4-68	1	Install showerhead filter in all units, include information in the tenant handbook		
4-69	3	Provide track-off mats, carpets, and/or shoe grates at principle entryways to building	3	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
4-70	2	Provide a shoe removal and storage area at the entrance to each unit		
4-71	1	Do not install gas-burning appliances inside unit or building		
4-72	1	Install floor drain or catch basin with drain under washing machines (and condensing/heat pump dryers if applicable)		
4-73	1-2	Use radon resistant construction using EPA standards (passive) (1 pt) or test for radon and install active system after building is complete (2 pts)	1	
		Subtotal	**4**	
EXTRA CREDIT / INNOVATION for Health and Indoor Air Quality				
4-74	1-10	Extra credit / innovation for Health and Indoor Air Quality		
		Subtotal	**0**	
		HEALTH & INDOOR AIR QUALITY TOTAL	**108**	

SECTION 5: MATERIALS EFFICIENCY				
OVERALL				
5-1	10 or 15 or 20	Design and build for deconstruction concept - 50% (10 pts), 75% (15 pts), or 90% (20 pts)		
5-2	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 sqft)		
		Subtotal	**0**	
JOBSITE OPERATIONS				
5-3	1	Provide weather protection for stored and installed materials	1	
5-4	15	Purchase a one-time carbon offset to account for carbon footprint of materials, minimum of 50% of project footprint		
5-5	2	Use suppliers who offer reusable or recyclable packaging		
		Subtotal	**1**	
REDUCE				
5-6	5	Implement comprehensive construction waste reduction and management plan	5	
5-7	5-20	Reduce total waste generated on site (see handbook for point tiers)		
		Subtotal	**5**	
REUSE				
5-8	15-30	Use deconstruction to dismantle and reuse existing building components on site (see handbook for point tiers)		
5-9	1	Sell, give away, or reuse wood scraps, lumber and land clearing debris		
5-10	1	Donate, sell, or give away reusable finish items		
5-11	1-20	Reuse salvaged materials (1 pt per material, examples listed in handbook)		
5-12	1-20	Use salvaged lumber, 1 pt per 100 board feet		
		Subtotal	**0**	
RECYCLE				
Source Separation Recycling - if points are claimed here, none may be claimed under Commingle Recycling				
5-13	1	Recycle cardboard by source separation, 90% minimum recycling rate		
5-14	2	Recycle metal scraps by source separation, 90% minimum recycling rate		
5-15	5	Recycle clean scrap wood and broken pallets by source separation, 90% minimum recycling rate		
5-16	2	Recycle package wrap and pallet wrap by source separation, 90% minimum recycling rate		
5-17	3	Recycle drywall by source separation, 90% minimum recycling rate		
5-18	2	Recycle concrete/asphalt rubble, masonry materials, or porcelain by source separation, 90% minimum recycling rate		
5-19	1	Recycle paint by source separation, 90% minimum recycling rate		
5-20	4	Recycle asphalt roofing by source separation, 90% minimum recycling rate		
5-21	2	Recycle carpet padding by source separation, 90% minimum recycling rate		
5-22	2	Recycle carpet by source separation, 90% minimum recycling rate		
5-23	1	Recycle glass by source separation, 90% minimum recycling rate		
5-24	3	Recycle land clearing and yard waste, food waste, soil and sod by source separation, 90% minimum recycling rate		
5-25	3	Recycle electronics and batteries		
5-26	1	Provide bin for miscellaneous household waste	1	
		Subtotal	**1**	
Commingle Recycling - if points are claimed here, none may be claimed under Source Separation Recycling				
5-27	10	Send at least 90% of jobsite recyclables (by weight excluding concrete) to an approved commingled recycling facility with 50% recycling rate	10	
5-28	18	Send at least 90% of jobsite recyclables (by weight excluding concrete) to an approved commingled recycling facility with 75% recycling rate	18	***MAY NOT BE IN BASELINE PROJECT, BUT COULD BE FOR OTHERS WITHIN JURISDICTION***
5-29	24	Send at least 90% of jobsite recyclables (by weight excluding concrete) to an approved commingled recycling facility with 90% recycling rate		
		Subtotal	**28**	
DESIGN AND MATERIAL SELECTION				
Overall				
5-30	1	Use standard dimensions in design of structure	1	
5-31	10	Design and install recycling stations on each floor, including a maintenance service plan	10	
5-32	8	Design and install food waste management system on each floor, including a maintenance service plan	8	
5-33	1-3	Install materials with longer life cycles		
5-34	1-10	Install locally/regionally produced materials (1 pt per material)	5	
5-35	2-6	Use rapidly renewable building materials and products made from plants harvested within a ten-year cycle or shorter (2 pts per material)		
5-36	3	Use no endangered species or old growth wood	3	
5-37	3	Use no PVC, CPVC, or ABS piping for plumbing or sprinklers within the building envelope		
		Subtotal	**27**	

Framing				
5-38	2	Create detailed take-off and provide as cut list to framer		
5-39	2	Use central cutting area or cut packs	2	***MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION***
5-40	6 or 10	Use dimensional lumber that is third-party certified sustainably harvested wood that meets the Tier 1 (10 pts) or Tier 2 (6 pts) requirements outlined in the handbook, 50% minimum		
5-41	4 or 7	Use sheathing that is third-party certified sustainably harvested wood that meets the Tier 1 (7 pts) or Tier 2 (4 pts) requirements outlined in the handbook, 50% minimum		
5-42	3 or 5	Use beams that are third-party certified sustainably harvested wood that meets the Tier 1 (5 pts) or Tier 2 (3 pts) requirements outlined in the handbook, 50% minimum		
5-43	6	Use factory framed wall panels (panelized wall construction)		
5-44	5	Use advanced wall framing - 24-inch OC, with double top plate		
5-45	3	Use engineered structural products and use no 2xs larger than 2x8, and no 4xs larger than 4x8		
5-46	4-8	Use structural insulated panels (SIPs) (see handbook for point tiers)		
5-47	5	Use insulated concrete forms (ICFs)		
5-48	1	Use finger-jointed framing material (e.g. studs)		
5-49	8	Use Cross Laminated Timber in place of steel or concrete		
		Subtotal	**2**	
Foundation				
5-50	6	Use fly ash or blast furnace slag for 25% by weight of cementitious materials for all concrete		
5-51	2	Use recycled concrete, asphalt, or glass cullet for base or fill		
		Subtotal	**0**	
Sub-Floor				
5-52	1	Use recycled content sub-floor		
		Subtotal	**0**	
Finish Floor				
5-53	2	If using vinyl flooring, use product with recycled content	2	
5-54	4	No vinyl flooring		
5-55	1	Use recycled content carpet pad	1	
5-56	2	Use recycled content carpet	2	
5-57	2 or 4	Use replaceable carpet tile for 50% of carpeted area (2 pts) or 100% of carpeted area (4 pts) (minimum of 50 sqft)		
5-58	5	If using tile, use hard surface tile that is 40% recycled content		
5-59	5	Use natural linoleum		
5-60	3 or 5	Use flooring that is third-party certified sustainably harvested wood for at least 50% of hard surface flooring (see handbook for point tiers)		
5-61	1	Use spot repairable floor finish		
		Subtotal	**5**	
Interior Walls				
5-62	2	Use drywall with a minimum of 95% recycled content synthetic gypsum or 10% if non-synthetic gypsum		
5-63	2 or 3	Use recycled or “reworked” paint and finishes on main surfaces or all surfaces		
		Subtotal	**0**	
Ceilings				
5-64	1	If installing acoustical ceiling tiles, select a recycled content product		
		Subtotal	**0**	
Windows				
5-65	8	Use all wood, composite, or fiberglass windows		
		Subtotal	**0**	
Trim				
5-66		If using wood trim:		
5-66a	2 or 3	Use trim that is third-party certified sustainably harvested wood, 50% minimum (see handbook for point tiers)		
5-66b	3	Use finger-jointed or MDF trim with no added urea formaldehyde, 90% minimum		
5-66c	1 or 2	Use wood veneers that are third-party certified sustainably harvested woods, 50% minimum (see handbook for point tiers)		
		Subtotal	**0**	
Cabinetry and Counters				
5-67		For cabinets:		
5-67a	1 or 2	Use third-party certified sustainably harvested wood for at least 75% of cabinet casework (see handbook for point tiers)		
5-67b	3	Use recycled-content cabinet casework for at least 75% of all casework		
5-67c	1	Use cabinet casework and shelving made with agricultural fiber that is NAUF, NAF, or ULEF for at least 75% of all cabinetry		
5-68	1 or 4	Use resource efficient countertop material in lobby/reception areas (1 pt) or in all areas (4 pts)		
		Subtotal	**0**	
Roof				
5-69	2	Use recycled content roofing material		
5-70	2	Use a modified bitumen built-up roof		
5-71	5	Protect at least 90% of built-up and membrane roofing with ballast, pavers, or vegetated roof systems		
		Subtotal	**0**	
Insulation				
5-72	4	All cavity insulation to have a minimum of 40% post-consumer recycled content		
5-73	5	Use environmentally friendly foam building products (CFC-, HFC-, HCFC-free)		
		Subtotal	**0**	

Exterior Walls				
5-74	2	Use recycled content sheathing (OSB does not apply)		
5-75	3	Use exterior cladding with reclaimed or recycled material on at least 20% of solid wall surface		
5-76	4	No vinyl siding or exterior trim	4	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
5-77	3	Use 50-year siding product (minimum 20% of solid wall surface)		
5-78	3 or 5	Use wood siding that is third-party certified sustainably harvested wood on at least 20% of solid wall surface (see handbook for point tiers)		
		Subtotal	**4**	
Other Exterior				
5-79	2 or 3	Use 100% recycled content HDPE or lumber that is third-party certified sustainably harvested wood for decking and porches (see handbook for point tiers)		
5-80	2	Use post-consumer recycled content plastic lumber for decking		
5-81	5	If lumber is used, use no pressure treated lumber		
		Subtotal	**0**	
BENCHMARKING				
5-82	5	Commit to annual tracking of building trash using ENERGY STAR Portfolio Manager and to sharing with Built Green		
		Subtotal	**0**	
EXTRA CREDIT / INNOVATION for Materials Efficiency				
5-83	1-10	Extra credit / innovation for Materials Efficiency		
		Subtotal	**0**	
		MATERIALS EFFICIENCY TOTAL	**73**	

SECTION 6: OPERATION, MAINTENANCE & TENANT EDUCATION				
6-1	7	Provide educational materials designed for the public that highlight the green building features and their performance that are included in the project	7	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-2	5	Prepare an environmentally friendly operations and maintenance plan for common area facilities	5	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-3	5	Prepare an environmentally friendly landscape operations and maintenance plan	5	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-4	6	Develop and provide a building-wide food waste disposal strategy		
6-5	7	Require tenants to sign an energy consumption data release form (if separately metered)		
6-6	5	Require tenants to sign a water consumption data release form (if separately metered)		
6-7	7	Conduct training sessions for maintenance staff and/or residents	7	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN
6-8	5	Give individual feedback to all tenants about their energy consumption in comparison to others and/or building average		
6-9		Provide tenants with materials including information on:		
6-9a	1	Where to dispose of food waste (compost)	1	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-9b	1	Where to dispose of recycleables	1	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-9c	1	General practices to conserve water and energy	1	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-9d	1	Transportation options and resources	1	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-9e	3	EVs, their benefits, and where to charge them	3	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-9f	2	Green features and benefits of the buildings	2	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
6-9g	3	Maintenance checklists for their unit	3	MAY NOT BE IN BASELINE PROJECT, BUT LIKELY FOR OTHERS WITHIN JURISDICTION
		OPERATION, MAINTENANCE & TENANT EDUCATION TOTAL	**36**	

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SECTION 6: OPERATION, MAINTENANCE & TENANT EDUCATION	**36**
GRAND TOTAL	**424**

Appendix 4 - Passive House Strategies

Comparative Analysis of LEED, Built Green, & Passive House

- **Air Tightness Requirement**: 0.05 CFM50 and 0.08 CFM75 per square foot of gross envelope (WSEC requires 0.40 CFM75). Requires continuous air barriers and a rigorous threshold for the ASTM E779 fan pressure test. Advanced sealing measures: General Contractor estimate required.
- **Source Energy Limit:** 6200 kWh per person per year.
- **Roof Assembly**: target R-81 (WSEC stipulates R-49 for in-roof insulation; R-38 for above-deck insulation).
- **Wall Assembly**: above-grade target R-39 (WSEC stipulates R-21 for wood frame construction). Requires either deeper studs and/or adding exterior, continuous insulation.
- **Space Conditioning:** non-standard mechanical systems are typically required to comply (e.g. Energy Recovery Ventilation [ERV], possible heat-pump heating): Attention to building geometry – less complicated perimeter (e.g. rectangle or L-shape) will be more efficient for thicker insulation & infiltration mitigation.
- **Materials:** thicker/denser insulation, triple pane glazing, additional sealing and thermal bridging strategies, and additional shading strategies.
- **Resources:**
    - http://www.phius.org/phius-2015-new-passive-building-standard-summary
    - *PHIUS+ Certification for Multifamily Performance Requirements (v2.0)*
        - http://www.phius.org/PHIUSPlus2015docs/PHIUS-Plus_Multifamily-Certification-Standard-v2.1.pdf

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August 28, 2018

Miranda Redinger, Senior Planner
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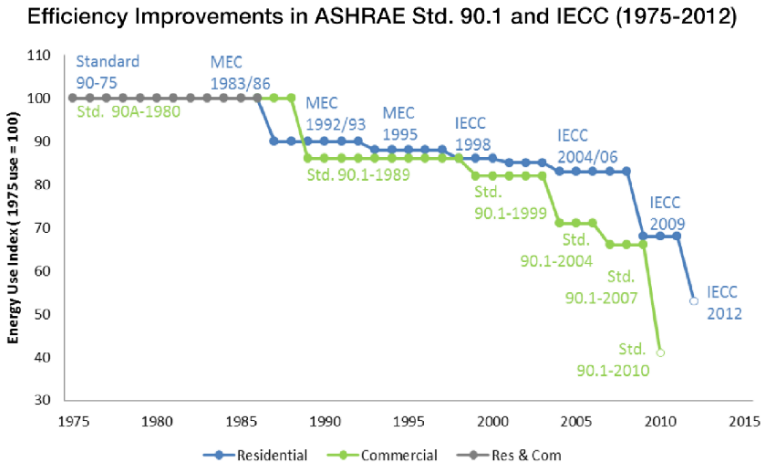
Dear Miranda,

Thank you for the opportunity to share our perspectives regarding Green Building Practices and their application in the City of Shoreline. While the majority of our comments are specifically made in reference to our Shoreline Place redevelopment, the principles and concepts apply to the City of Shoreline as a whole.

For more than 25 years our partnership has acted as an owner, operator and developer of more than 25 million square feet of retail and retail driven mixed-use projects on the west coast. We are not a merchant builder which means that we have a perspective that extends across the lifecycle of an asset. It is with this experience in mind that we share the following observations regarding Green Building Practices:

1. Our experience suggests that incentivizing thoughtful, well-planned redevelopment of existing, obsolete infrastructure and inefficient improvements results in the most significant sustainability gains for a municipality.

2. Current building code, storm water regulations and mechanical, electrical and plumbing (MEP) code provisions dictate green building practices and standards. As these building codes have been updated and adopted with the increased technological advancements and policy goals for environmental sustainability, the initiatives that were once optional are now effectively mandated as shown below.



Source: ACEEE

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3. The adopted Washington State Energy Code exceeds the minimum requirements of USGBC LEED v4 (https://new.usgbc.org/leed-v4) and mandates new construction be at least 60 percent more efficient than the existing structures on site (https://www.energycodes.gov/adoption/states/washington).

4. These widely adopted standards that extend throughout the building industry supply chain reflect responses to market demand and supply constraints while addressing policy objectives. As a result, these "baseline" standards in the energy code capture the largest percentage of efficiency gains, especially when properties are actually redeveloped. Modern building materials and construction are inherently more efficient than in the past.

5. Given the built-out nature of Shoreline, commercial development of any kind involves the redevelopment of existing land use. Current code and regulatory standards are much more stringent than those applied to existing sites developed 40-50 years ago. Indeed, many standards such as storm water management did not even exist 40-50 years ago.

6. Many well intentioned policy makers lack sufficient feedback at the asset level to recognize and celebrate the significant gains achieved through redevelopment of existing inefficient buildings and infrastructure, which when combined with planning policies such as mass transit and Transit Oriented Development (TOD), are the most significant forces behind sustainability in the built environment.

7. In regards to Green Building Practices, it is important for policy makers to take note of the fact that due to the existing sustainability requirements mandated within the building code, the current discussions about Green Buildings are really about the small remainder of incremental improvements that could potentially be achieved but are often less impactful than the existing mandates on an incremental basis (when compared against the prospect of an older project not being redeveloped for example).

8. These final increments are expensive and often not reasonably achieved from a physical or operational stand point. The unintended consequence of pursuing these incremental gains through public policy and mandates related to Green Building Practices can often result in a stifling of redevelopment. For example, if a project is mandated to comply with a program or standard to reduce water usage below a certain benchmark, an unintended consequence may be a lack of necessary infrastructure for certain water dependent restaurants or businesses to operate, thereby rendering the program counter-productive.

9. Over-regulation including policies that do not deliver quantifiable returns on investment tend to stifle redevelopment by increasing costs and creating greater complexity and risk with little or no economic benefit.

10. Since the benefits of these incremental gains are typically found in operational efficiencies (utility bills), end users rather than the developers (typically not the end users themselves) must be willing and able to pay for these incremental costs.

11. End users may not accept additional cost or operation and maintenance (O&M) implications of "additional" green mandates especially when the incremental gains above the already mandatory building

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code measures are not noticeable and the cost associated with the mandated standards are already incorporated into the project cost.

12. Additional regulations are also typically not cost or economic cycle sensitive, creating greater obstacles when the economy is weak or construction costs are inflationary.

13. The largest gains on sustainability are transportation related, thus TOD with public transportation investments or infill redevelopment around existing land uses and infrastructure investments are the true keys to successful sustainability implementation. These investments result in the highest rate of return on environmental sustainability rather than focusing on achieving the last increments of sustainability at the risk of disincentivizing the former through redevelopment.

14. There are also challenges with the implementation of Green Building programs. With various standards, metrics and green systems they do not tend to work well together (the exception being LEED and Energy Star).

15. As well intended green building initiatives and mandates have proliferated, a cottage industry has formed competing to differentiate themselves. Because there is no one-size-fits-all program, various niche programs have formed. Oftentimes they are so complex that a municipality or participating developer are required to hire a costly consultant to navigate the paperwork for compliance and certification.

16. While fee waiver incentives serve to acknowledge the cost impact of the additional regulation, the proportional cost is rarely recovered due to the actual soft costs to navigate, comply and certify under the programs. O&M expenses are also rarely captured in offset evaluations or payback analyses.

17. For the vast majority of property types and markets, certifying LEED or other green programs represents substantial costs with little benefit.

18. These programs are especially burdensome on smaller scale commercial redevelopment as dictated by smaller parcels that are already challenging and risky to redevelop to begin with. Given an added layer of risk and process many non-institutional developers would just as soon pass on an opportunity to redevelop if a green building mandate exists.

19. The City has invested considerable resources in trying to create incentives for redevelopment, particularly in the CRA. The added regulation would act as a disincentive, running counter to these investments especially when the construction cost environment is high and the green building mandates in the building code are already in place.

20. Encouraging redevelopment acts as a catalyst for the implementation of planning policies such as the Aurora Square Community Renewal Area.

21. Redevelopment of the former Sears, for example, will result in a healthier, more sustainable environment through implementation of the mandated building code requirements in addition to the provision for a

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new Town Green and a walkable neighborhood with new retail and restaurant spaces and excellent access to transit.

22. If redevelopment of the Sears were disincentivized, for example, there would be relatively minor improvements to the Sears building to allow it to be leased for 10 – 20 years, with the result being an expansive surface parking lot with no storm water control and inefficient building systems remaining in place.

If Shoreline has a competitive advantage in relation to adjacent communities, it is our recommendation that Shoreline maintain that advantage by not imposing additional cost and regulatory requirements.

Respectfully,

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Barron Caronite, PE
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cc: Debbie Tarry, City Manager
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