

STAFF REPORT

1 What is Green Building?

Green building is one of the fastest growing trends in the construction industry. It promotes a whole-systems approach to the planning, design, construction and operation of buildings. It offers substantial benefits to property owners, occupants and the entire community by:

- Reducing utility, maintenance and infrastructure costs
- Reducing water usage
- Improving construction quality and building longevity
- Protecting the health of workers and residents
- Reducing environmental impacts through efficient resource use and sustainably created products

2 Green Building Rating Systems

Over the past several years two principal green building rating systems have risen to the level of national and statewide standards – LEED[®] (Leadership in Energy and Environmental Design) and GreenPoint Rated. The benefit of these rating systems is that they have been developed with industry involvement, extensively tested and frequently updated. They train and certify green building designers or raters, which significantly simplifies implementation by local building divisions.

The European Union has endorsed a very rigorous green building standard called Passive House that focuses almost entirely on energy efficiency to the point of eliminating the need for furnace or air conditioning systems, even in northern European climates. Over 16,000 Passive House buildings have been certified over the past decade, and many European cities and countries have mandated its use for all new construction.

GreenPoint Rated is administered by Build It Green (BIG), located in Berkeley. Over 70 California cities have adopted green building regulations utilizing the GreenPoint Rated system. Over 445 professionals have been certified as Green Point Raters, including dozens in the North Bay, and are utilized as part of a project design team and verify the inclusion of green building features in the final building construction. Green Point Rated checklists are only available for residential projects. There are three checklists: New Home (Single Family) and New Home (Multi-Family) and Existing Home. The Existing Home system is devised for both major (Whole House) and minor (Elements) remodels to single-family homes. BIG will have a remodeling checklist for multi-family buildings completed next year.

The GreenPoint Rated system allows flexibility in selecting from a broad list of possible green building elements, but requires a minimum number of points in five categories: Community Design, Energy Efficiency, Indoor Air Quality, Water Conservation and Resource Conservation. The energy requirements mandate that a project achieve at least 15% greater energy savings than the minimum level required by the state energy code (Title 24). To qualify as GreenPoint Rated a project must achieve at least 50 points (25 points for the remodeling Elements checklist) out of a potential of over 300 maximum points.

LEED[®] is administered by the U.S. Green Building Council (USGBC), located in Washington, D.C. LEED[®] has 5 rating systems for various types of non-residential building types: New Construction (for new buildings and major renovations), Core and Shell (for spec. buildings with unfinished interiors), Commercial Interiors (for interior improvements), Schools, Healthcare and Retail, and Operations and Maintenance (for fine tuning building systems and maintenance). LEED[®] has recently completed LEED[®] for Homes (residential) and a pilot version of LEED[®] Neighborhood Development (for subdivisions and mixed-use projects).

The LEED[®] rating systems include items which are “Prerequisites” – mandatory requirements which must be met prior to points being accumulated. For example, for new construction projects must demonstrate a minimum 20% water savings and 10% energy reduction from base codes. There is also a prerequisite for building commissioning, which requires the involvement of a building systems specialist to verify that the energy related systems (lighting, cooling, heating, hot water) are designed, installed and calibrated for maximum efficiency. The many discretionary options which may be included to accumulate necessary points to achieve certification are known as “Credits.” LEED[®] offers different rating levels based upon the number of points achieved (out of a possible 110 points): Certified [40-49 pts.], Silver [50-59 pts.], Gold [60-79 pts.] and Platinum [80-110].

It is hoped that eventually green building standards will be incorporated into the mandatory state building codes for statewide consistency. A first step in this direction was taken by the California Building Standards Commission in 2008 when they adopted the California Green Building Standards Code for new construction. Most of these are voluntary measures, but there are 7 required items currently and 11 more will be mandated in 2011. These requirements are very much a minimum standard at present, and the adopting legislation gave explicit authority for local governments to adopt more stringent standards.

3 Financial Implications

There have been several studies and much debate about the cost effectiveness of green building techniques. An attached engineering analysis of several LEED[®] certified buildings found a range of additional cost from 1% to 6% of total project budget, however these initial costs are offset by long term cost savings from lower energy and water use (see Exhibit 3). This range of cost premium is similar to that reported by the construction manager of the San Rafael Corporate Center (new LEED[®] Gold office buildings) and the County’s Health and Wellness Campus (extensively remodeled LEED[®] Gold buildings). Incorporation of LEED[®] provisions increased the cost of the Corporate Center construction by about 1% and by the Wellness Campus by about 6%. It is also instructive to note that the owners of both the Corporate Center and the Northgate Mall have elected to seek LEED[®] Gold certification even though not required by current City ordinances due to expectations of both lower long term maintenance costs and higher lease rates/more rapid lease-up due to occupant desires for better air quality and comfort and lower utility costs.

A September, 2009 study by the U.C. Energy Institute found that LEED[®] office buildings command rental rates that average 6% higher and sold for an average of 16% more than standard buildings.

There have been no definitive studies of the added costs of the GreenPoint Rated system or for building renovations under the LEED® system.

4 Existing Green Building Ordinances in Marin

Six jurisdictions in Marin currently have some form of mandatory green building requirements - Marin County, San Rafael, Novato, Mill Valley, Larkspur and Tiburon (see Exhibit 2). All utilize the GreenPoint Rated system for residential and all have mandatory requirements for new construction. Only Novato and the County have requirements for remodels, but utilize the new building rating system which BIG considers an inappropriate application for remodeling. For non-residential buildings, all except Novato use LEED rating systems. Novato has created a rating system based on the California Green Buildings Standards Code. Again, new construction and larger additions are addressed, but only Mill Valley and Novato address tenant improvements.

5 Preparation of a Model Green Building Ordinance for Marin County Jurisdictions

In an attempt to standardize green building regulations among the cities, towns and County of Marin, elected or appointed representatives from each jurisdiction volunteered to serve as a Task Force as part of the Marin Green BERST (Green Building, Energy Retrofit and Solar Transformation) process. A Technical Advisory Committee composed of approximately 50 experts in the fields of construction, architecture, energy consultation, building performance, building inspection, planning, and real estate met 11 times to recommend model regulations to the Task Force. Several presentations were made to city/town councils, and the Task Force endorsed the proposed green building regulations at their meeting of November 19, 2009. The regulations included in the attached ordinance and resolution are consistent with the proposed countywide model green building ordinance.

6 Technical Advisory Committee – Objectives

The Technical Advisory Committee (TAC) identified the following objectives for green building regulations in Marin:

1. Regulations which are consistently implemented across Marin jurisdictions.
2. Regulations which achieve the following, in priority order:
 - a. Energy savings
 - b. Greenhouse gas reductions
 - c. Water conservation
 - d. Practicality of implementation
 - e. Cost effectiveness
 - f. Improved indoor air quality and occupant health
 - g. Resource conservation
 - h. Adaptability for future technology
 - i. Effective marketing
 - j. Environmental protection

7 Technical Advisory Committee – Key Findings and Strategies

Over the course of information sharing and discussions over seven meetings, the following findings and strategies emerged, which influenced the TAC recommendations:

Key Findings

- Most contractors and designers in Marin are already utilizing many green building techniques, either through government requirements or because they save costs and materials. There is great desire among contractors and designers to have a consistent set of standards among jurisdictions to simplify compliance.
- Incorporation of green building components, and involvement of design professionals with expertise in green building, can increase initial construction costs by a few percent, and is most easily absorbed in the cost of larger projects.
- The energy and water savings required by green building rating systems will have long term benefits to property owners, building occupants and the entire community.
- The State of California has mandated that new commercial buildings have zero net energy use by 2020 and residential buildings by 2030. This may result in consideration of standards like Passive House.
- GreenPoint Rated is the most commonly utilized residential green building rating system, and LEED[®] is most common for non-residential projects.
- Many contractors and designers in Marin indicate that achieving the minimum number of points required in the GreenPoint Rated system (50 points) is not difficult and requires few design modifications.
- There are great benefits to building commissioning, which is required for LEED[®] certification, since it involves maximizing the efficiency of energy components in a building (lighting, HVAC, hot water), both during design and in actual operation.
- Since Marin communities are largely “built out,” there is relatively little construction of new buildings. Imposing green building requirements to remodeled buildings will have a greater impact in Marin than limiting requirements to new buildings. It is also more challenging to apply green building requirements to remodeling, since there can be such wide variation in the scope and cost of remodeling projects. The GreenPoint Rated system for remodeling requires that a home energy audit be conducted to help focus improvements on the most cost-effective means of energy savings. The cost of a home energy audit is typically \$500 - \$700, but is regarded by construction industry experts as vital information for effective remodeling projects and money very well spent.
- A very high proportion (over 80%) of building permits issued in Marin are for very minor permits, with valuation of less than \$25,000.
- Verification of the inclusion of green building measures is best accomplished through both plan review/field verification/on-site testing by designers or raters who have been trained and certified by the organizations which have developed the rating systems (BIG for GreenPoint Rated or the USGBC for LEED[®]), and through those organizations formal certification processes. Such certification is also intended to create a branding that will increase property value upon resale or leasing. Certification of homes by BIG costs

approximately \$450, and provides the local jurisdiction with a computation of greenhouse gas reduction achieved, which will be helpful in future reporting to state agencies. The USGBC certification process is much more involved, and may add several thousands of dollars in cost to large projects and occurs after occupancy of a project (to complete building commissioning). The USGBC has recently contracted with another non-profit recently to streamline its certification process.

Strategies

- As the size and cost of building projects increase, greater green building requirements can be accommodated by the larger project budgets and the expertise of design professionals involved. The TAC recommendations propose higher point requirements as project size and valuation increases.
- For smaller, less costly projects, the emphasis is on increasing owner awareness of energy use, using a “whole building” systems approach. The recommendations include either very minimal green building requirements or merely completing the applicable green building checklists (without any point requirements) to educate property owners or lessees on the options and benefits of green building. For residential additions and remodels valued at over \$50,000, it is recommended that property owners be required to have an energy audit performed on the existing building, again to increase energy awareness and to promote the pursuit of greater energy efficiency.
- Since the highest priority objective of the TAC is energy conservation, several of the recommendations propose that projects exceed the minimum requirements of the State Energy Code (Title 24) by prescribed percentages. This approach is also consistent with state objectives to move the construction industry towards zero net energy use in buildings over the next two decades.
- Given the desire of property owners and the City to have vacant commercial buildings reoccupied following the current recessionary period, only voluntary green building measures are recommended for tenant improvements or minor alterations of less than 5,000 square feet or \$500,000 valuation. Relatively minimal requirements are recommended for tenant improvements and minor alterations between 5,000 - 25,000 square feet or less than \$5 million.
- For consistency, GreenPoint Rated and LEED® are the recommended standards, with the ability of applicants to propose other comparable rating systems or techniques, such as Passive House.
- Third-party verification is proposed to significantly reduce implementation responsibilities for local building departments.
- The model ordinance needs to include flexibility for the Chief Building Official to waive requirements which are infeasible (e.g., the requirement to pre-wire homes for photovoltaic systems for lots in deep shade) or to allow applicants to “offset” requirements by funding installations of energy or water conserving features on other properties that achieve comparable savings.

- Given the rapid evolution of green building techniques, research, training and government mandates, it is certain that these regulations will need to be updated frequently, hopefully in a similar comprehensive manner between jurisdictions.

8 Recommendations

A summary of the recommendations of the TAC are attached as Exhibit 1, and explained as follows:

Residential Buildings

New single family and duplex structures would have to be GreenPoint Rated, using the New Home Green Building Guidelines. The number of required points would increase from 75 for a home up to 2,500 square feet, up to 150 points for a new home of 7,000 square feet. In addition, larger homes would have to exceed the requirements of the State Energy Code, Title 24, beyond the 15% increase normally required to be GreenPoint Rated. Homes over 7,000 square feet would have to achieve 200 points, and have zero net energy use. There would be an allowance to “offset” the energy requirements if they cannot be achieved on site, allowing a developer to pay for energy efficiency or renewable energy systems on other properties. In addition, new homes would have to be pre-plumbed and pre-wired to accommodate future installation of photovoltaic panels and solar hot water.

New multi-family projects would also be required to be GreenPoint Rated, using the Multi-family Green Building Guidelines. The minimum points required would increase based on average unit size to encourage smaller, more efficient units, starting at 60 points for units less than 1,000 square feet, up to 75 points for larger units. The same requirements for pre-plumbing and pre-wiring PV and solar hot water would be included, with exceptions for some multi-story units.

Remodeling and additions to residential structures would be treated as follows:

- Building permits for construction of less than \$50,000 in project valuation would be subject to some minor requirements beyond the state building code, based on the type of work. Remodeling which opens walls would be required to insulate exposed hot water pipes, and reroofing projects that remove the roof sheathing would be required to install a radiant barrier (a thin metal material which inhibits heat transfer by radiation). Both upgrades involve minimal additional cost but have significant energy savings benefits.
- For remodeling valued from \$50,000 - \$100,000, applicants would have to submit a completed GreenPoint Rated Existing Homes checklist, but there would be no requirements to include any green features in the project. The purpose of completing the checklist is only to help educate property owners, which may incentivize them to voluntarily modify plans. In addition, the property owner would be required to have a home performance (energy) audit performed (using either the HERSII protocols from the California Energy Commission when these become available for use in 2010 or those from the Building Performance Institute), which will identify areas where the home is not energy efficient. Such an audit can cost between \$500 and \$700, although costs may decrease due to increased volume and green job training efforts to increase the number of auditors. Again, the intent is owner education and to incentivize voluntary energy efficiency upgrades.

- For remodels between \$100,000 - \$300,000, applicants would be required to achieve between 25 and 35 points on the GreenPoint Rated Existing Homes Elements checklist, which was devised for partial remodeling projects. The Existing Homes checklist requires an up-front home performance audit to establish an energy baseline upon which the remodeling must improve building energy performance.
- For remodels over \$300,000, applicants would have to achieve at least 50 points on the GreenPoint Rated Existing Homes Whole House checklist, which is intended for larger remodels, and which may require modifications beyond the area of remodeling, and demonstrate at least a 20% improvement from the home energy audit.
- Remodeling of multi-family projects is not addressed since Build It Green is currently developing a rating system for multi-family renovations.

Verification of compliance with green building requirements may vary by jurisdiction due to staff capabilities (certification of building inspectors as GreenPoint Raters or LEED[®] Accredited Professionals) or the desire to utilize third-party experts. For new single-family and multi-family dwellings it is recommended that the GreenPoint Rated certification from Build It Green, which costs \$450 for a custom single-family home) be obtained for three reasons:

1. Build It Green provides a quality assurance program for certified projects, whereby a percentage of a raters projects are reevaluated by third party experts,
2. Green building certification will add value in real estate sales, and is being branded by Build It Green through realtor associations,
3. Build It Green provides a calculation of greenhouse gas reductions resulting from the certified project which will assist local agencies in tracking and taking credit for greenhouse gas reductions, and
4. The fees from certification help fund Build It Green's maintenance of rating checklists and extensive training efforts.

Due to the reduced budget for remodeling projects, it is recommended that the requirements for projects between \$50,000-\$100,000 in valuation be verified by agency staff. Larger remodeling projects would be verified in plan check and through field inspection by a GreenPoint Rater, either in-house staff or third party, without the requirement for project certification by Build It Green.

Non-Residential (including Civic) Buildings

New non-residential buildings or additions would use the LEED New Construction or Core & Shell Guidelines, and requirements would vary based on project size:

- Projects between 2,000 and 5,000 square feet would have to submit a completed LEED checklist, but no minimum points would be required. However, applicants would have to meet the 8 LEED Prerequisites (SS-P1 Construction Activity Pollution Prevention, WE-P1 20% Water Use Reduction, EA-P1 Fundamental Commissioning of Building Energy Systems, EA-P2 Minimum Energy Performance, EA-P3 Fundamental Refrigerant Management, MR-P1 Storage and Collection of Recyclables, IAQ-P1 Minimum Indoor Air Quality Performance, and IAQ-P2 Environmental Tobacco Smoke Control).

- Projects between 5,000 and 50,000 square feet would have to achieve a LEED Silver rating. To improve energy efficiency, buildings above 5,000 square feet would have to be 15% below Title 24 requirements.
- Projects over 50,000 square feet would have to achieve a LEED Gold rating.
- As with residential, new non-residential buildings and major remodels would have to be pre-plumbed and pre-wired for future PV and solar hot water, with an exception process.

Tenant improvement and minor alteration projects for non-residential buildings are even more difficult to regulate than residential remodeling due to the great variation in the vintage, construction type and condition of existing commercial buildings, the challenge of dealing with incremental improvement of tenant spaces in multi-tenant buildings, and the splitting of utility and capital costs between landlords and tenants. The LEED Commercial Interiors or Operations & Maintenance checklists would be utilized, with the following requirements based on project size:

- For projects less than \$500,000 in valuation, only voluntary compliance with 2 Prerequisites and 1 Credit of the Commercial Interiors checklist would be suggested. For multi-tenant buildings, the Prerequisite and Credit affecting the HVAC system would only be applicable if over half of the building is being modified, since it would not be reasonable for a single tenant improvement to trigger the replacement of the HVAC unit for the entire building.
- For projects between \$500,000 and \$5 million in valuation, compliance with these 2 Prerequisites and 1 Credit of the Commercial Interiors checklist would be required.
- Projects over \$5 million in valuation would be required to be LEED Silver rated.

The building certification process under the LEED[®] rating system by the U.S. Green Building Council has been notoriously slow and costly. For this reason, the USGBC has delegated this function to the Green Building Certification Institute which has regional offices. Due to the increased cost and complexity of LEED[®] certification it is recommended that green building requirements in new non-residential buildings be verified by a LEED[®] Accredited Professional. Since LEED[®] APs are not required to have field inspection experience, it is further recommended that LEED[®] APs verifying compliance with the ordinance requirements also have an additional green building certification which tests for field expertise, such as GreenPoint Rated or the Building Performance Institute.

For large new non-residential buildings (recommended at 50,000+ square feet) it is recommended that full LEED[®] building certification be required.

Exceptions

For both residential and non-residential buildings, the model ordinance would include a hardship or infeasibility exemption, and there would also be an exception for historic structures from green building requirements that would impair the structure's historic integrity. Exceptions are also included for seismic upgrades, installation of renewable energy systems, flood or earthquake repair and required disabled access improvements.

9 Potential for Modifications to Model Ordinance

Given the variation in the types and sizes of construction projects among the 12 jurisdictions in Marin it is unlikely that a model green building ordinance will work for all agencies. Therefore, it is suggested that the following areas are available for individualization by each jurisdiction:

1. The required number of points and project size ranges can be modified,
2. Compliance with the ordinance could be achieved through third-party raters (GreenPoint Raters or LEED® APs) or by in-house inspectors with the necessary certifications,
3. Exemptions from the ordinance can be tailored for each jurisdiction (e.g., historic structures, second units, affordable housing developments, seismic or ADA upgrades, floor or earthquake damage, etc.),
4. Possible incentives (e.g., fee reductions, recognition, etc.) are listed for achieving higher ratings, but can be tailored for each jurisdiction, and
5. The process steps can be modified for each agency. Some, for example, may wish to have the green building checklists submitted at the planning application stage rather than waiting for the building permit application.

10 Next Steps

1. An application will be prepared with assistance of an energy consultant to the California Energy Commission which must approve of local regulations which exceed the minimum requirements of Title 24 to assure that they are cost effective. The adopted ordinance would not become effective until such approval by the California Energy Commission is received.
2. An application will be made to the California Building Standards Commission to review the proposed findings of local climatic conditions. The adopted ordinance would not become effective until such approval by the California Building Standards Commission.
3. Presentations will be offered to requesting agencies to explain the model ordinance provisions and rationale.
4. Local agencies will adopt the model ordinance, or a variant of it, if they choose.
5. Building officials will collaborate over implementation of the common green building provisions.