

Green Building Standards CDP Summary

The purpose of this document is to provide information to facilitate informed input to the SLDC Public Input Process for the green building CDP. This document includes the following;

1. Existing code and policies relating to sustainable and green building.
2. Summary of policies identified in the Sustainable Growth management Plan and issues and for this CDP
3. A list of possible alternatives for implementation of the SGMP policies into the SLDC from least to most stringent with respect to green building.
4. Questions and other related information for this CDP

NOTE: While obviously a component of “green building”, water conservation and stormwater runoff will be considered in other Concept Decision Points.

Existing Code and Policies regarding Green Building

The current code and regulations for green building are summarized below:

For New Mexico counties without “home rule” authority, relevant building codes are adopted by the New Mexico Construction Industries Commission (CIC) and inspected and enforced by the NM Construction Industries Division (CID.) In general, the County may adopt code measures, including green building code measures, that are more stringent than or “go beyond” what the CIC has adopted, but there is an issue regarding the extent to which those measures will actually be inspected and enforced by CID. The County currently does not provide building inspections and enforcement.

What do the SGMP policies state about Energy Efficiency and Green Building?

Keys to Sustainability, Goals, Policies and Strategies:

Strategy 23.2.1: Assess practicality to develop a County Green Building Code and applicable incentives to ensure energy efficiency, water conservation and renewable energy improvements in development projects.

Create standards for green development; conservation of energy and production of renewable energy; reduction of greenhouse gas emissions and air pollution.

Utilize local resources for building materials and establish a catalog of available recycled materials. Adobe, stone, pumice, wood are all available in Santa Fe County. There are also a variety of recycled materials such as glass, plastic, metals and paper available from transfer stations and the landfill.

Promote durability and longevity in the design and construction of residential and commercial structures. Building materials should be chosen and evaluated for low embodied energy, low impact on the environment and ability to last for generations similar to many historic structures.

Create incentives for green design, resource conservation, reuse and retrofitting buildings with energy efficient features and building materials.

Goal: 25: Development should comply with the principles of sustainability and conservation in the SGMP.

Strategy 25.2.2: Analyze City of Santa Fe and State Green Building Codes for applicability in the County.

Policy 25.5: Adopt green development and sustainability design and infrastructure standards for new residential and nonresidential development in the SLDC.

Goal 26: Promote sustainable development through green building and development techniques.

Policy 26.1: Promote environmentally responsible sustainable green building, site and community design, improvement and development standards.

Policy 26.2: Encourage green construction and neighborhood development materials and techniques for residential and nonresidential development. Strategy 26.2.1: Establish comprehensive sustainable design and improvement standards for green development and renewable energy systems.

Policy 26.3: Encourage sustainable use and conservation of buildings, land and water.

Policy 26.4: Encourage xeriscaping and natural vegetation shading for buildings and hardscape surfaces.

Issues with Current Code:

- The green building policies adopted by the BCC in the SGMP suggest that the County adopt energy efficiency and other green building regulations.
- The County currently does not provide building permits and inspections. This is done through NM CID.
- If the County were to establish green building regulations, the County may need to establish a building permit and enforcement program or otherwise identify a mechanism for ensuring compliance with the adopted standard.

Green Building Summary:

Like many terms, “green building” is interpreted differently depending on the context. The United States Green Building Council (USGBC) interprets green building to include a whole host of “environment friendly” considerations including not only energy and water conservation but the use of non-toxic building materials and/or building materials made with recycled content, recycling of construction debris, alternative modes of transportation (e.g. bike racks and shower facilities for commercial buildings), proximity to mass transit, etc. While the SGMP recognizes the merits of all aspects of “green building”, it tends to primarily focus on energy (energy efficiency and renewable energy) and water (conservation and storm water harvesting) concerns. Energy efficiency standards, in particular, have a substantive benefit in reducing a home’s or commercial building’s electric and natural gas utility costs. As roof-top solar and other renewable energy technologies costs continue to decline over time and as energy utility rates continue to rise, renewable energy standards and incentives will have a similar “pay back” benefit.

The NM CIC revised the residential and commercial building energy codes in 2010. The CIC not only revised the energy code from the 2006 “International Energy Conservation Code” (IECC) to the 2009 IECC, but adopted selected “beyond code” energy efficiency measures as well. The 2009 IECC was modified in places to accommodate special climate or building-related considerations specific to New Mexico, resulting in the “NM Energy Conservation Code”. (see link below). Updating the code from the 2006 to the 2009 IECC resulted in an average energy savings of 7-10% for residential buildings. The “beyond code” measures adopted by CIC resulted in a cumulative savings of approximately 20.9% for residential and 17.5% for commercial construction over the 2006 code. Note that energy efficiency savings estimates utilize certain assumptions and methodologies that are subjective, to a certain extent.

“Affordability”

Building “affordability” in the last few decades has generally meant keeping the price of the home or commercial structure as low as possible, with little consideration given to the energy demands and therefore costs associated with heating, cooling, lighting and other activities that consume energy in a building. In the days of cheap energy (now disappearing rapidly), such a myopic interpretation of affordability was understandable. But energy utility rates are on the rise, for example: over the last three years, PNM increased

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electric rates by over 20% and has proposed another 20% rate increase, while NM Gas Co. has a 13% natural gas rate increase proposal currently before the NM Public Regulation Commission. (Not possible!) A comprehensive view of building affordability should include the combined monthly mortgage and energy utility bill payments. Most consumers don't write a check for the cost of a building. They finance it over 30 years. So the initial purchase price of the home or commercial building is not as relevant to the concept of "affordability" as the combined monthly loan payment and energy utility expenditures. Indeed, high heating and/or cooling costs have contributed significantly to home foreclosures in some instances.

Most (but not all) energy efficiency measures increase the costs of constructing of building, albeit minimally in most instances. Some may argue that requiring additional energy efficiency measures in residential buildings "prices people out of homes". But if carefully analyzed and selected, energy efficient code requirements will reduce the combined monthly mortgage and energy utility bill payments. The slight increase in the cost of the home (and, therefore, the monthly mortgage payment) that the additional energy efficiency requirements create is more than off-set by the reduction in monthly energy utility costs.

For example, in the case of the "beyond code" energy efficiency measures adopted by the NM Construction Industries Commission (CIC) last year (discussed below), an engineering cost analysis concluded that the efficiency measures increased the monthly mortgage payment for a home by \$15/month but reduced the energy utility bill payments by \$29/month – for a net benefit of \$14/month. Thus the homeowner is better off financially from the first month of home ownership with a more energy efficient home. With this concept of home affordability, requiring cost-effective, energy efficiency standards in new buildings can be a benefit to both the homebuyer and homebuilder. Homes and commercial buildings are built to last for 60-70 years, therefore, it is reasonable to consider future energy costs when determining the cost-effectiveness of various energy efficiency measures.

Green Building Standards Alternatives - Possible alternatives that are being used in other areas and range from least stringent (and the least energy conserving) to most stringent (and most energy conserving).

Alternative 1: No additional Green Building Standards.

New home construction would need to comply with the 2009 IECC adopted by the NM CIC as the "NM Energy Conservation Code). Santa Fe County does not enforce the 2009 IECC.

The IECC establishes requirements and standards for aspects of a building's construction that affect energy consumption – generally broken down into the "building envelope" (e.g. number, size, type and location of windows and doors, wall, floor and ceiling insulation, etc.) and non-building envelope (e.g. mechanical, electrical, water heating and indoor and outdoor lighting). In concert with the Uniform Mechanical Code, the IECC also addresses heating, ventilation and air conditioning (HVAC) standards. The IECC does not address energy consuming items that are not an integral part of the building such as appliances and "plug loads" (e.g. computers, TVs, desk lamps, etc.). The following links provide more information on the IECC and, specifically the 2009 IECC.http://reca-codes.org/pages/current_code.html

<http://reca-codes.org/pages/iecc2009.html>

http://www.thirtypercentsolution.org/solution/EECC-Savings_Analysis-Jan-2009.pdf

The actual NM Energy Conservation and Mechanical Codes may be found at:

<http://www.rld.state.nm.us/cid/rules-and-law.htm> These are the most recent, weaker or "rolled-back" versions of the code adopted by the CIC in June of this year.

Alternative 2: Adopt Green Building Standards similar to those approved by the NM CIC Last Year

This would include the 2009 IECC and certain “beyond code” energy efficiency measures that met the “building affordability” test discussed above. Those additional measures are too numerous to list in this briefing but can be found on page 6 for residential and page 15 for commercial in “State of NM Energy Conservation Code 2009-2010 Update, Overview of Process and Results” (eSolved Inc., June 2010). This document can be found as a link on the Growth Management Department’s Sustainable Land Development Code web page.

Alternative 3: Require Home Energy Ratings Standards (HERS)

Establish a system which would require new development to meet a specific energy saving requirement. The HERS index is a scoring system established by the Residential Energy Services Networks (RESNET) in which a home built to the specifications of the HERS reference home (based on the 2006 International Energy Conservation Code) scores a HERS index of 100, while a net zero energy home (a home that generates on-site all the energy it consumes) scores a HERS index of 0. The lower a home’s HERS index, the more energy efficient it is in comparison to the HERS Reference Home.

Each 1-point decrease in the HERS index corresponds to a 1% reduction in energy consumption compared to the HERS Reference Home. Thus a home with a HERS index of 85% is 15% more energy efficient than the HERS Reference Home and a home with a HERS index of 80 is 20% more energy efficient.

Implementation of a HERS program may include measures of efficiency which are assigned a point value for specific categories. Energy efficiency categories may include lot design, site design, resource efficiency, energy efficiency, water efficiency, indoor environmental quality and operation, maintenance and sustainable practice.

This alternative would require the County to establish a system such as the City of Santa Fe Residential Green Building Code and verification, review and/or inspection process. The City of Santa Fe adopted a HERS requirement of 70 for homes under 3000 sq.ft. Larger homes are required to have a lower (more energy efficient) HERS rating. Information on the City of Santa Fe’s Green Building Code may be found at <http://www.santafenm.gov/index.aspx?NID=1297>.

More information on HERS ratings can be found at: <http://www.resnet.us/>

Alternative 4: Require USGBC LEED Certification

The USGBC’s “Leadership in Energy and Environmental Design” (LEED) rating system is nationally recognized as one of the premier green building rating systems. LEED ratings system LEED has four levels of increasingly aggressive green building standards: LEED “basic”, Silver, Gold, and Platinum. It provides criteria for rating the environmental performance of construction practices and provides guidelines for documentation that demonstrates conformance; it encourages cost-effective and sustainable building methods, by encouraging conservation of fossil fuels, water and other natural resources, reduction of greenhouse gas emissions, recycling of construction materials reducing solid waste and improving indoor air quality; it includes mandatory green building requirements to ensure that construction waste and deconstruction materials are recycled, reused, or otherwise diverted from landfills, and minimum requirements to ensure that dwellings are constructed in an efficient manner; and it includes provisions intended to provide for joint administration with

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the processing of building permits for remodeling, adding on, and constructing residential and non-residential structures.

Any development would be required to be submitted for compliance in whichever LEED rating system the applicant deems most suitable to the project type: LEED NC (New Construction), EB (Existing Buildings), CI (Commercial Interiors), Core & Shell, or Homes.

More information on LEED can be found at: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988>

Key Questions and Issues for Establishing Green Building Standards

1. (This question essentially duplicates Q#5).
2. What green building elements (energy-related and non-energy related) should be required and what should be incentivized?
 - a) Energy Efficiency (HERS, insulation, solar siting)
 - b) Using local materials
 - c) Using recycled materials
 - d) Minimize construction waste
 - e) Minimize construction materials
3. Do we need different standards for different locations (i.e different geography, climate zones, or growth areas)?
4. What incentives could be used to encourage additional green building?
5. For energy efficiency standards, should we use the “building affordability standard” discussed above?
6. Should residential and commercial standards be different? If so, on what basis?
7. What resources (staff and otherwise) are required to administer any proposed regulations?