

1 CITY OF SANTA FE, NEW MEXICO

2 RESOLUTION NO. 2009-73

3 INTRODUCED BY:

4  
5 Councilor Calvert

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8  
9  
10 A RESOLUTION

11 AMENDING CERTAIN ITEMS IN THE ADMINISTRATIVE PROCEDURES FOR THE  
12 SANTA FE RESIDENTIAL GREEN BUILDING CODE TO CLARIFY AND CORRECT  
13 TEXT; TO PROVIDE EQUITABLE REQUIREMENTS FOR DIFFERENT HEATING  
14 AND AIR CONDITIONING EQUIPMENT THAT RESULT IN HIGHER GREENHOUSE  
15 GAS EMISSIONS THAN THE EQUIVALENT CODE-MINIMUM EQUIPMENT; AND  
16 TO BETTER ALIGN ITEMS WITH THEIR PURPOSE FOR THE SIZE OF TREES AT  
17 PLANTING AND FOR WATER EFFICIENT FIXTURES.

18  
19 WHEREAS, on March 11, 2009, the Governing Body adopted the administrative  
20 procedures for the Santa Fe Residential Green Building Code by Resolution No. 2009-42; and

21 WHEREAS, since that time certain amendments to the administrative procedures have  
22 been determined to be necessary and appropriate; and

23 WHEREAS, such amendments include clarification and correction of text and provisions  
24 of equitable requirements for different heating and air conditioning equipment that result in  
25 higher greenhouse gas emissions than the equivalent code-minimum equipment.

1           **NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE**  
2 **CITY OF SANTA FE that** the Administrative Procedures for the Santa Fe Residential Green  
3 Building Code are amended as follows:

4           **Section 1.       Item 1.3.3 is amended to read:**

5 1.3.3 Minimize slope disturbance.

- 6           \*A. Complete a hydrological/soil stability study for steep slopes and use this study to  
7           guide the design of all structures on site. Applies to slopes between 20-30%.
- 8           \*B. Align road or extended driveway with natural topography to minimize its grade and  
9           reduce cut and fill.
- 10          C. Reduce long-term erosion effects through the design and implementation of  
11          terracing, retaining walls, and restabilization techniques.
- 12          D. 100% of disturbed area is on 0-10% slopes OR
- 13          E. No more than 5% of disturbed area for building and driveway construction is on 0-  
14          10% slope and all other disturbed area is on slopes of 0-10%.

15 **Intent:**

16 Leaving a slope undisturbed reduces the risk of disturbing natural hydrological drainage and  
17 causing long and short-term erosion on the site, which can pollute water sources and damage  
18 local ecology.

19 **Additional Information / How to Implement:**

20 Within these guidelines, steep slopes are defined as those slopes that are greater than or equal to  
21 25%. *Note: points should only be awarded if there are developable steep slopes in the area.*

22 Reduce cut and fill practices to help prevent unnecessary stripping of vegetation and loss of soils  
23 and reduce the need for additional resources to be brought in from off-site.

24 **Resources:**

25 Prince George's County, Maryland, Department of Environmental Resources, *Low-Impact*

1 *Development Design Strategies: An Integrated Design Approach* (EPA 841-B-00-003) (Largo,  
2 MD: June 1999), <http://www.epa.gov/owow/nps/lid/lidnatl.pdf>.

3 **Section 2. Item 1.5.2 F is amended to read:**

4 F. Specify planting of trees, of 1½” caliper minimum and irrigation for 1 year, to increase  
5 site shading and moderate temperatures (see also Energy Efficiency guideline 3.3.5.1.D  
6 specifying siting of trees to reduce the energy consumption of the home). Chinese Elm,  
7 Siberian Elm, Russian Olive, Tree of Heaven, Salt Cedar shall not be allowed.

8 **Section 3. Item 2.8.1 is amended to read:**

9 2.8.1 Use locally available, indigenous materials such as adobe, compressed earth block (CEB),  
10 and rammed earth, from less than 500 miles radius of site. Twenty-seven total points available.

- 11 • Use locally available , indigenous materials for 50% of the wall structure
- 12 • Use the soil from the site for adobe or compressed block\_without removing it for  
13 processing.
- 14 • Use one type of locally available, indigenous material for non-structural and non-  
15 decorative item
- 16 • Use of additional indigenous materials – one point each

17 **Intent:**

18 To make the home building process more environmentally acceptable by minimizing  
19 transportation and processing costs and using materials that are common in the local region.

20 **Additional Information / How to Implement:**

21 A builder can obtain three points for this line item if they incorporate at least one type of locally  
22 available, indigenous material into the home’s construction. An additional point can be obtained  
23 for each additional type of material for a maximum point total of five points.

24 Guidance to program administrators: Points should be awarded in this section based on criteria  
25 such as 10% of the building materials are extracted, processed, and manufactured within a 300-

1 mile radius or within a 1000-mile radius if shipped by rail, or a combination of the two distances.

2 **Section 4. Item 2.8.4 is amended to read:**

3 2.8.4. Use recycled content materials for 50% of the wall assembly (not for finger jointed studs,  
4 engineered lumber or cellulose insulation or for reclaimed lumber from a building that was  
5 deconstructed for which points were taken under items 2.3.1 or 2.3.2).

6 **Intent:**

7 Reduce the amount of new material used in construction.

8 **Additional Information / How to Implement:**

9 This can include a variety of materials including cans, tires, bottles, stow buckets, pallets, etc.

10 **Section 5. Item 3.1.3 is amended to read:**

11 3.1.3. Heating, ventilation, or air conditioning (HVAC) equipment that uses electricity instead  
12 of natural gas or propane such that the net greenhouse gas emissions from the system are greater  
13 than for the code-minimum equipment for the same purpose, such as ground source heat pumps  
14 or electric space heating, unless it receives at least 20% of its electric load from photovoltaic or  
15 other renewable electric source or enough to off-set the additional greenhouse gas emissions  
16 using local data, documenting the actual efficiency of the appliance or equipment. (For example,  
17 ground-source heat pumps with a Coefficient of Performance of 3.75 would have the same  
18 greenhouse gas emissions as a code-minimum 80% efficient natural gas furnace or boiler with a  
19 95% efficient blower and would not receive negative points nor need to off-set with renewable  
20 energy.)

21 **Intent:**

22 Different sources of energy have different greenhouse gas impacts and vary from region to  
23 region. In Santa Fe, electricity from the grid has a greenhouse gas impact about three times  
24 greater than either natural gas or propane for the same amount of energy. This difference is not  
25 reflected in the Home Energy Rating System index. This deduction in points is intended to

1 encourage decisions about HVAC equipment that includes consideration of greenhouse gas  
2 emissions and not just cost of operation and to help people understand the difference of  
3 greenhouse gas footprints of different sources of energy.

4 **Additional Information / How to Implement:**

5 The greenhouse gas resulting from a unit of energy of electricity as compared to that of either  
6 natural gas or propane in Santa Fe is approximately three times greater. Even with efficiencies of  
7 some appliances and equipment which might make equipment that requires electricity to be less  
8 expensive to operate, the greenhouse gas footprint may be higher to generate the same unit of  
9 energy.

10 If you choose to use HVAC equipment that uses electricity when either natural gas or propane is  
11 usually used for the same purpose such as a ground-source heat pump, first, select equipment that  
12 carries the ENERGY STAR label, or check manufacturer's literature for HSPF data. The ACEEE  
13 lists the highest efficiency equipment available (see Resources). The current federal minimum  
14 Heating Season Performance Factor (HSPF), the standard measure of heat pump efficiency in the  
15 heating mode, is 6.8. Heat pumps are often the cost-effective solution for space conditioning  
16 equipment in climates where outdoor temperatures are moderate and there is a need for both  
17 heating and cooling. Air-to-air heat pumps are not recommended since winter temperatures in  
18 Santa Fe drop below 35 degrees fahrenheit. Since heating is the predominant load, consider a heat  
19 pump with an HSPF of 8.0 or higher.

20 The energy required to pump liquid through a heat pump system is substantial. Once you have  
21 selected the most energy-efficient unit available that meets your heating (and possibly cooling)  
22 needs, you need to calculate the amount of electricity you will need over the course of a year and  
23 provide clean renewable energy source for at least 20% of that demand or calculate what the  
24 difference in greenhouse gas emissions would be for running the system over a typical year and  
25 compare that to the emissions of using code-minimum equipment and provide clean renewable

1 energy for that difference.

2 **Resources:**

- 3 1. American Council for an Energy-Efficient Economy's list of most energy efficient  
4 appliances <http://www.aceee.org/consumerguide/mostenef.htm>
- 5 2. <http://www.energystar.gov> for a list of equipment meeting ENERGY STAR  
6 standards
- 7 3. International Ground Source Heat Pump Association (IGSHPA), database of  
8 accredited installers and designers of geothermal heat pump systems:  
9 [http://www.igshpa.okstate.edu/business\\_directory/home.html](http://www.igshpa.okstate.edu/business_directory/home.html)

10 **Section 6. Item 3.3.5.1(B) is amended to read:**

11 **B. Use passive solar design: Sun-tempered design with all items below:**

- 12 • Sun-tempered design as outlined in item 3.3.5.1a except additional glazing permitted  
13 on south wall
- 14 • For any room with south-facing glazing > 12%, but not exceeding 20%, of finished  
15 floor area, properly sized thermal mass shall be used, which is at least 4" thick  
16 masonry material with the surface area 6 times that of south glazing and located in  
17 direct sun in winter or line of sight of other thermal mass. Where the ground floor  
18 slab is used for solar mass, it shall be insulated below.
- 19 • Trombe walls, or other indirect gain systems are recommended for a portion of the  
20 south-facing glazing to avoid over-glare and nighttime heat loss. All indirect gain  
21 systems are recommended to use an overhang as described below in 3.3.5.1.D.
- 22 • Glazing on west walls shall not exceed 2% of floor area or 4% on north and east  
23 walls unless use of high thermal efficient windows are used such that the net energy  
24 loss is the same as if standard double-pane windows were used based on the HERS  
25 analysis.

- 1           • Provision for forced air flow to adjoining areas as needed.

2           Note: All applicable items in 3.3.5.1.A except south-facing glazing must be done in order  
3           to receive points for 3.3.5.1.B.

4   **Intent:**

5   To reduce the amount of non-renewable energy required to heat and cool a home by taking  
6   advantage of the sun's energy through passive design features that collect desirable solar heat  
7   gain and mitigate unwanted solar heat gain.

8   **Information / How to Implement:**

9   In most regions of the country having a winter heating load, homes can be designed such that a  
10   portion of this load can be satisfied by solar gains. As south facing glass is increased to obtain  
11   greater solar benefit, thermal mass must be provided to store excess heat gain, prevent  
12   overheating, and moderate heat delivery to the home. Properly sized thermal mass (typically in  
13   the form of masonry materials such as tile floors and brick walls, or water) absorbs heat while the  
14   sun strikes it and releases that heat slowly once the sun has gone down. Designing a truly passive  
15   solar home requires careful calculation of solar gain, thermal storage capacity, and hourly outdoor  
16   winter conditions. Obtain the Passive Solar Design Guidelines (see Resource) for your climate as  
17   well as the other references cited below if you intend to build a passive solar home. It is also  
18   advisable to consult a design professional with background and experience in passive solar  
19   design.

20   **Resources:**

- 21           • *Green Building Guidelines – Meeting the Demand for Low-Energy, Resource-*  
22           Efficient Homes, Chapter 2A: Renewable Energy: Solar and Other Renewables,  
23           Sustainable Buildings Industry Council.
- 24           • Sustainable Building Industry Council Passive Solar Design Guidelines, available at  
25           <http://www.sbicouncil.org>

1           **Section 7. The caption for item 4.1.1 is amended to read:**

2 4.1.1 Retrofit toilets within the limits of the City of Santa Fe: Lots up to 6, 000 s.f. must retrofit 8  
3 toilets, lots between 6,001 and 8,000 must retrofit 10 toilets, and lots above 8,000 must retrofit 12  
4 toilets to receive points. These points are available to affordable homes (Santa Fe Homes unit,  
5 Housing Opportunity Program unit or a low priced dwelling unit as defined in the Santa Fe City  
6 Code 1987).

7           **Section 8. The caption for item 4.2.4 is amended to read:**

8 4.2.4 Water efficient showerhead using conventional aerator or venturi technology for flow rate  $\leq$   
9 2.5 gpm

10          **Section 9. The caption for item 4.2.5 is amended to read:**

11 4.2.5 Water-efficient sink faucets/aerators  $\leq$  2.2 gallons/minute for kitchen and  $\leq$  1.5  
12 gallons/minute for bathrooms.

13          **Section 10. The caption for item 4.2.6 is amended to read:**

14 4.2.6 Ultra low flow, ( $\leq$  1.3 gpm/flush) toilets installed:

- 15 A. Power-assist or other low flow alternatives
- 16 B. Dual flush toilets.

17          **Section 11. Item 4.3.1(D) is amended to read:**

- 18 D. Rainwater distribution system that uses a renewable energy source or gravity  
19 (minimum capacity of 200 gallons).

20 Intent:

21 To reduce domestic potable water demand while not adding energy demand.

22 **Additional Information / How to Implement:**

23 Rainwater that is collected in a collection system for later distribution to water landscaping  
24 reducing the demand for domestic potable water for that use. However, if the system is designed  
25 to require pumping that is powered by conventional energy sources, there are associated



1 greenhouse gas emissions. Therefore, points are given for this item if either gravity or a  
2 renewable energy source used to distribute the collected rainwater into the landscaping. To meet  
3 the intent of this item there needs to be at least 200 gallons of storage capacity in the system to  
4 qualify for the points.

5 **Section 12. Item 6.5.2 is amended to read:**

6 6.5.2 Builder or owner/builder that applies for the building permit uses hybrid or alternative  
7 fuel vehicle(s).

8 **Intent:**


9 To reduce the greenhouse gas emissions associated with vehicle use during construction.

10 **Additional Information / How to Implement:**

11 Provide a copy of the title of the vehicle(s) to the City of Santa Fe.

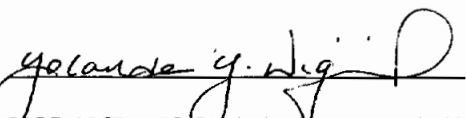
12 **AND BE IT FURTHER RESOLVED** that this Resolution shall become effective  
13 immediately upon adoption.

14 PASSED, APPROVED, and ADOPTED this 8<sup>th</sup> day of July, 2009.

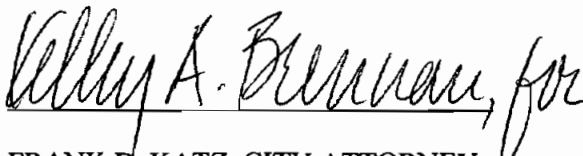
15  
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17 ATTEST:

18 DAVID COSS, MAYOR

19   
20 YOLANDA Y. VIGIL, CITY CLERK

21 APPROVED AS TO FORM:

22   
23 FRANK D. KATZ, CITY ATTORNEY

24 mb/ca/jpmb/2009 res/green code admin procedures 2  
25