

STAFF REPORT

TO: Hailey City Council

FROM: Mariel Platt, Planner

RE: Ordinance Amendment – Chapter 15.08, Building Code, of the Hailey Municipal Code

HEARING: October 25, 2010

Notice

Notice for the August 23, 2010 public hearing was published in the Idaho Mountain Express and mailed to public agencies and area media on August 4, 2010. The public hearing was postponed at the August 23, 2010 meeting and was published in the Idaho Mountain Express and mailed to public agencies and area media again on September 8, 2010. The public hearing was continued at the September 27, 2010 meeting and at the October 11, 2010 meeting to October 25, 2010.

Proposal

Amendments to Chapter 15.08 of the Municipal Code are proposed by the City. These amendments would:

1. Adopt the 2009 IECC with an effective date of January 1, 2011.
2. Add a new Section - Section 15.08.012, Build Better Program - creating an above-code building standard, with a one (1) year voluntary period starting on January 1, 2011 and an effective date of January 1, 2012.

Refer to the attached ordinance for the proposed language.

Procedural History

At the last meeting, on September 27, 2010, staff presented the ordinance to the Council. At this meeting, the Council requested the following additional information:

1. Financial evaluation of additional construction costs to comply with the Build Better Program versus the 2009 IECC.
2. Review of building permit fees to identify potential for reductions in fees and compare fees to other jurisdictions.

The Council requested the following changes:

1. Remove new windows from the Build Better Program's requirement for an energy analysis (audit).
2. Add language to allow a one year voluntary period.

On October 21, 2010, staff met again with members of the AIA.

The Council first reviewed the proposal on April 26, 2010, when the Sustainable Building Committee presented its recommendation for an above-code building program. During the April review, the Council instructed staff to 1) draft an ordinance, 2) respond to follow up questions asked by the Council, and 3) continue education and outreach efforts with the public.

Staff presented responses to the Council's questions in May 24, 2010 and has continued with education and outreach efforts, hosting the Build Better, Build Smart Community Series events on July 22, 2010 and August 12, 2010. In addition, the Committee met with members or affiliates of the Hailey Chamber and Rotary and discussed the proposed amendments.

In May 2010, staff submitted the draft ordinance to a technical review committee assigned by the U.S. Department of Energy and the State of Idaho, for a thorough review by building and energy experts. Staff received both groups' comments and follow up on questions and further discussion. The draft amendments reflect the suggestions and comments made by the review committees.

Requested Information

HERS for Energy Analysis (audit) and for New Residential Construction:

HERS is a whole systems approach for performance testing that models the entire home and all elements that affect energy efficiency, such as insulation levels, window efficiency, wall-to-window ratios, the heating and cooling system efficiency, the solar orientation of the home, and the water heating system. HERS can be used to establish an existing home's energy performance as well as forecast the energy performance of planned homes and verify the performance after the home is built.

The data gathered by the home energy rater is entered into a Residential Energy Services Network (RESNET) accredited computer program called REMRATE and translated into a rating score. The home receives a score between 0 and 100 and is compared to the IECC 2009 code. An estimate of the home's energy usage and associated costs is also provided in the report.

The benefits to using HERS over the traditional prescriptive method of verification are as follows:

- Determines the most cost-effective energy efficiency measures and proper equipment sizing.
- The performance path provides the most flexibility for the building and design community.
- The HERS tool incorporates various design and construction elements such as orientation, overhangs, window placement, ceiling systems, that is not contemplated in Res-check.
- HERS requires a more integrative design process, versus a linear design process. Studies have shown the integrative design process creates increased energy efficiencies for the least amount of money¹. Informal input from the building community indicates architects can fail to address "energy" outcomes or infrastructure in their designs. This creates large hurdles for implementing cost-effective energy efficiencies. Performance standards would promote designers to evaluate the energy efficiency outcomes of their design choices and work with contractors and mechanical engineers to meet those goals.
- HERS is a nationally recognized energy performance label that allows comparison between homes.
- HERS is the tool of choice for most locally adopted above-code building programs and is

¹ International Initiative for Sustainable Built Environment (iisBE) "The Integrated Design Process". Nils Larsson. January 31, 2004.

used as a method of verification in LEED for Homes and ENERGY STAR programs.

- HERS provides quality assurance and verification, peer review and testing.

HERS can also be used as a tool to address new buildings to ensure that energy efficiency is considered and basic principles are incorporated into the design and construction of new homes. Although new construction will be a small percentage of the buildings in Hailey for many decades, it may be the most feasible time to build a higher performing building. Retrofits or after construction improvements are often much more costly than planning for a higher performing building. For instance, when you buy a more energy efficient furnace for an existing home the cost may be about \$300 more than a conventional furnace; however, the return on investment is within 3-5 years and afterward, the building owner continues to save money and energy. If you were retrofitting an existing building with a new energy efficient furnace the cost would be \$1,400, instead of the cost difference of \$300, assuming you don't already need a new furnace anyhow. That is precisely why the recommendation does not include improvements to be made to the existing structure HERS energy analysis or audit. Building a home right the first time prevents unnecessary retrofits and energy expenses for the next 75 years (average life span of a building) or for the life of the appliance, depending on what energy efficient building component is evaluated.

Hailey began enforcing an energy code in 1991. According to the 2000 U.S. Census, over 74% of the existing buildings in Hailey were built before 1990. It is anticipated that the existing building stock will continue to represent a large proportion of buildings in Hailey for many more decades. The proportion of newly constructed buildings remains relatively insignificant when trying to address overall energy efficiency. Generally, homes built before 1991 can expect to see the greatest energy efficiency improvements, with higher returns on investment than homes built more recently. By requiring energy analyses on existing buildings, the committee hopes it will raise awareness and provide home owners with information that could be used at anytime to increase the energy performance of their home. It would also begin to establish an energy rating for existing homes, so prospective buyers would be informed and future owners could make improvements if desired.

Financial Evaluation: New Construction

It is difficult to quantify how much energy will be saved and what the costs to build to 10% better than the 2009 IECC would be without modeling the building. Staff called David Neiger from Populus Sustainable Design, in Boulder, CO (David presented to the Council and held a community workshop on REMRATE and HERS last October), to see if he could provide some consulting services for staff to address the Council's request. David estimated the time it would take to re-run the software and quantify the construction costs at about \$750 per home, based on his rate of \$125/hr. Due to the expense, staff asked Jolyon Sawrey, architect and HERS rater, to do the analysis on a Hailey home that Jolyon had already modeled and that the City has building permit information on, prior to hiring a consultant.

Jolyon took an existing REMRATE model of a 1,600 square foot home built in Hailey to the 2009 IECC and made upgrades to specific components of the building that increase energy efficiency to 10% better than the 2009 IECC. The design of the home itself and the orientation was not changed. This is important to note, because studies have shown that strategic placement

of window and building orientation alone can increase energy efficiency up to 25%. This home was not designed with this in mind. The upgrades included the following:

- Increase U-value of windows
- Increased ductwork air sealing
- Increased attic, wall, stem wall, and rim of floor insulation r-value
- Increased lighting to 50% CFL
- Increased furnace to 94% efficiency

Jolyon estimated the additional expenses associated with each of these upgrades and reported the yearly energy savings calculated by REMRATE. The information resulted in the following evaluation conducted by staff:

Cost increase: 0.4% compared to 2009 IECC, based on the 2009 IECC cost of construction for this particular home estimated at \$300,000 (this figure includes HERS rater fees).

Annual energy costs for home built to 2009 IECC: \$1,395

Annual energy savings (built 10% more efficient): \$139.50

5 year savings: \$697.50

50 year savings: \$7,000

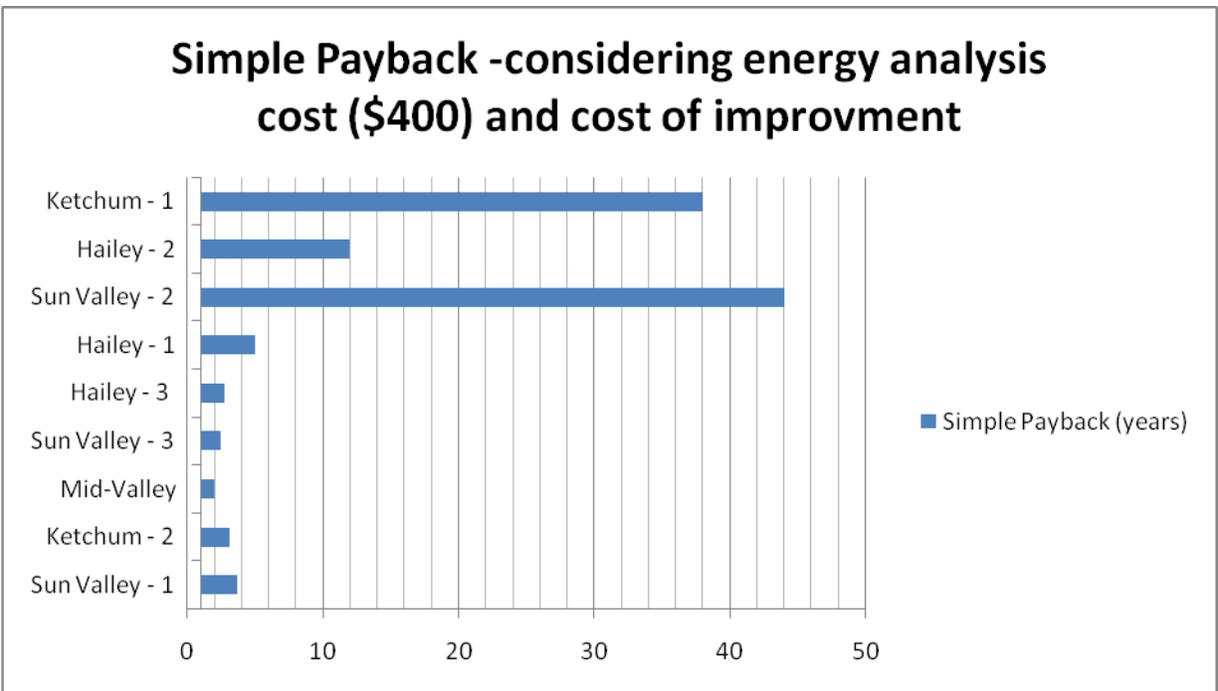
Simple payback: 8.7 years

If the Council wishes, staff could contract with Populus Sustainable Design to provide further evaluation using houses of varying sizes.

Financial Evaluation: HERS Energy Analysis (Audits)

One of the largest barriers to individuals making improvements to their building is lack of information. The purpose of the energy analysis is simply to provide the owner or occupant with valuable information on the building, its performance, and prioritize a list of improvements, their costs and associated energy savings, that can be expected if improvements are completed. No improvements are required. In order to justify the cost of a HERS energy analysis (approximately \$400) for additions over 500 square feet of conditioned space and certain alterations, staff felt it was important to evaluate whether there was financial value in the information. Therefore, by including the cost of the HERS energy analysis and the cost of the improvement when evaluating the simple payback, we get an understanding of the total value in an energy analysis.

Staff gathered nine (9) energy analyses performed in the valley by local raters and did a financial evaluation, assuming each recipient chose the one suggested improvement that presented the greatest payback to install or improve. This is a small sample size, but no final CARRP applications have been submitted to the city to date. Once we receive these final applications we will have an additional 18-25 Hailey energy analyses to include in the data. The data resulted in the following paybacks:



For more data please see attachment A.

Points Menu

The Council did not request a financial evaluation of the points menu; however, it was questioned by the Robert Crosby of the Sawtooth Board of Realtors and was determined to be important information by staff. The points menu applies to new residential construction, some residential additions greater than 500 sq. ft. of conditioned space, and exterior snowmelt systems. The number of points is based on the square footage of conditioned space and the number of bedrooms or the just the square footage in the case of snowmelt systems. The impetus for the creation of the points menu is to create a flexible approach that gives numerous options to choose from in an effort to off-set the amount of resources required for larger homes and additions. It attempts to encourage smaller, more efficient homes and additions based on the fact that the larger the home the greater the amount of energy and resources are consumed. Therefore, more points or greater sustainable practices and materials would be required.

Staff has re-reviewed the points menu to determine which points and how many points could be obtained for little to no additional cost. Staff identified point options that were thought to have little to no additional cost. Staff did not price out each point option in the points menu, due to the time required to contact manufactures, installers, and contractors. If the Council wishes, this is something that could be done during the following one (1) year voluntary period. It is estimated based on staff research that 31 points can be obtained with no additional cost. Another 11 points can be obtained for less than \$100 a point. Thirty-one (31) of the following 39 points can be obtained for no additional cost:

Reuse Existing Building: Up to 5 points.

Points	Percent of Exterior Walls saved (external sheathing and framing)
3	50%

5	75%
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New Construction Waste Recycling: Up to 3 points.

- i) Application: points will be awarded according to the following table:

Points	Percentage Waste	Percentage Diverted
1	75%	25%
2	50%	50%
3	25%	75%

Passive Cooling: 2 to 5 points.

i) Application: Any combination of natural cooling techniques can be used to reduce overheating in homes. Use awnings and window overhangs primarily on south-facing glass to provide a balance between summer cooling and winter heating through solar gain. Points will be awarded for passive cooling systems using any two or more of these techniques (one point per option):

- (1) Exterior vertical shading devices for east- and west-facing glass.
- (2) Low emissivity films on glass on east- and west-facing windows.
- (3) Radiant barriers installed in the attic space.
- (4) Landscaping that shades east- and west-facing windows during the cooling season (June to September).
- (5) South window overhang sized to effectively shade the window (from June to September).

Energy Efficient Appliances: Up to 6 points.

(1) Application: points will be awarded for ENERGY STAR appliances according to the following:

Points	Type of ENERGY STAR rated appliance
2	Refrigerator
2	Clothes washer
1	Freezer, not part of refrigerator appliance
1	Dishwasher

Advanced Framing Techniques: 2 to 10 points.

- i) Verification: Checked during plans review and a Verification of Accountability by Responsible Party form shall be submitted, before the final inspection.
- ii) 24-inch On-Center Framing: 2 points.
 - iii) Resource Efficient Insulated Headers: 2 points.
 - (1) Application: points are awarded for incorporating a minimum R-10 insulation in the header section.
 - iv) Trusses with energy heel: 2 points.
 - v) HVAC Ducts Within Conditioned Spaces: 2 points.
 - vi) Minimum 24-inch Roof Overhangs: 2 points.

Environmentally Preferred, Low Emission, and Local Materials: Up to 10 points from Chart A.

i) Application: For each assembly, all product specification type requirements shall be met in order to receive the points available. Environmentally preferred and low emission qualifying products have more than one of these attributes: recycled content, reclaimed, bio-based, agricultural residue, rapidly renewable, and low or no volatile organic compounds (VOCs) emissions. A “recycled content” product must contain a minimum of 25 percent post-consumer recycled content except as noted otherwise above. Post-industrial (pre-consumer) recycled content is counted at half the rate of post-consumer content. Except as otherwise noted in Chart A, 90 percent of the component, by weight or volume, must meet the specification shown. Locally sourced materials are products that are manufactured within 500 miles of the city are considered local. (For more details on these points refer to Chart A in the Points Menu section of the attached ordinance)

Reduction in Building Permit Fees

Due to the HERS rater providing verification with the building permit plans submittal and certificate of occupancy request as well as conducting inspections during the interim, the Building Department would no longer inspect the plans for energy code compliance. The Building Department has estimated that approximately 50% of the time spent on building permits for new residential construction is dedicated to energy code compliance. With the HERS rater providing this service, the building permit fee could be reduced by 50%. For a \$300,000 home, this equates to a \$1,500 reduction, approximately. HERS rater fees for new construction is estimated to cost \$1,000 to \$1,500.

In April 2010, staff presented development impact fee (DIF) comparisons at the Council’s request. In addition to this research, staff has also researched building permit fees and sewer and water connection fees for these jurisdictions, at the Council’s request. The comparative analysis is attached (Attachment B).

Requested Changes

Staff has made changes to exempt all windows, including new windows, from obtaining an energy analysis (audit). Staff has made changes to specify that from January 1, 2011 to January 1, 2012, the Building Better Program would be voluntary and would be eligible for building permit fee deferrals during this one year period as well.

Overview of Amendments

Compliance with State Codes

According to the Building Official, the state of Idaho will require the adoption of the 2009 codes including the 2009 International Energy Conservation Code (IECC), by municipalities on January 1, 2011. Staff suggests that the Council review the recommended Build Better Program and the 2009 IECC adoption now, but that neither amendment become effective until January 1, 2011. The Building Official will later present further code amendments, which would adopt the remaining 2009 building codes, later this fall, prior to the January 1, 2011 deadline.

The 2009 IECC is a stand alone code that does not conflict with other building codes; therefore, its adoption can be reviewed separately from the adoption of the remaining building codes.

Due to the state requirement to adopt the 2009 IECC, any above-code or local program, must

show compliance with 2009 IECC. Therefore, staff has drafted the amendments to reflect the adoption of the 2009 IECC and adheres to the mandatory requirements specified by the 2009 IECC, but makes changes to the methods of compliance and specifies that a 10% increase in energy efficiency above the 2009 IECC standards will be met in order to meet the specifications of the Build Better Program.

Ordinance Formatting

A summary of the proposed amendments and additions to Chapter 15.08, Building Codes, are as follows:

Amends Section 15.08.010, Adoption of codes.

- Adopts the 2009 IECC.

Creates Section 15.08.012, Build Better Program.

- Adds Applicability (Section 15.08.012.A)
- Adds Definitions (Section 15.08.012.B)
- Adds Energy Efficiency (Section 15.08.012.C)
- Adds Water conservation, indoor air quality, construction waste, and durability and assurance (WICDA) (Section 15.08.012.D)
- Adds Points Menu (Section 15.08.012.E)

Amends Section 15.08.020, Amendment of codes.

- Requires the performance method as a compliance path, not the prescriptive method, for both commercial and residential buildings.

Amends Section 15.08.030, Additional requirements.

- References Section 15.08.012, Build Better Program as a requirement above the 2009 IECC.

Administration

The Planning and Building Departments will jointly verify and implement the Build Better Program, in the following manner:

- Building Department will administer energy efficiency, Section 15.08.012.C.
- Building and Planning Department will administer the water conservation, indoor air quality, construction waste, and durability and assurance (WICDA), Section 15.08.012.D.
- Planning Department will administer the points menu, Section 15.08.012.E, excluding parts of Section 15.08.012.E.5 (the energy efficiency section of the points menu).

Summary

The Council should review the proposed ordinance amendment and approve, deny, or modify the amendment.

If the proposed change is approved, the Council is required to pass an ordinance making said amendment part of Hailey Municipal Code. The draft ordinance is attached.

Motion Language

Approval:

Motion to approve the proposed amendments to Chapter 15.08, adopting Ordinance ____ and authorize the mayor to conduct the first reading by title only.

Denial:

Motion to deny the proposed amendments to Chapter 15.08, finding that _____ [the Council should state reasons why the amendment is denied].

Continuation:

Motion to continue the public hearing upon the proposed amendment to Chapter 15.08 to _____ [the Council should specify a date].