

**Utilities**

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R-TRAC**Meeting # 7**

Topic: Resource Efficiency & Water Conservation

Wednesday August 11, 2010, 3 – 5:30 pm

PARTICIPANTS IN ATTENDANCE**Utilities Green Building Team**

Felix Lee – Green Building Code Project Manager

Amanda Sutton – Green Building Program Coordinator

Doug Swartz - Green Building Program Manager - Energy Services Engineer

Facilitator

Susanne Durkin-Schindler

R-TRAC Members

Company	Representative
Habitat for Humanity	Bob Hand
Aspen Homes of Colorado	Rob Sabin
The Green Team Real Estate	Lara Williams
Larkspur Homes, LLC	Michael Bello
IBE student	Laura Barrett
Crown Jade Design and Engineering, Inc.	Mark Benjamin
Vignette Studio	Terence Hoaglund
National Center for Craftsmanship	Nick Benson
Armstead Construction	Jeff Schneider
Merten Design Studio	Rob Ross

Building Officials

Jurisdiction	Representative
Larimer County	Tom Garton
Safe Built	Russ Weber
City of Longmont	Chris Allison
City of Fort Collins	Russell Hovland

Members of the Public

Alan Cram

Key Points

Green Building Code Development Prioritization Activity Recap - Susanne Durkin-Schindler

At the last meeting the R-TRAC participated in an activity to help identify and prioritize the top green building practices that will have a meaningful impact on building in Fort Collins. The committee identified 17 top green building practices and then ranked them based on importance. Those results were then compiled by staff (see appendix A). The information gained from this exercise will assist staff in identifying the key elements to include in the prescriptive portion of the green building code.

Upcoming Schedule - Doug Swartz

Based on the green building practices that were identified by the committee staff will sort those back into the main green building categories and start bringing those items to the committee to get feedback.

Water Conservation - Felix Lee

The City has a water conservation plan in place to reduce water use to 140 gallons per capita per day by 2020. The City is also a WaterSense partner. This is a label developed by the EPA and is the water equivalent to ENERGY STAR. WaterSense applies to fixtures and the maximum amount of water flow acceptable for each type of fixture. Staff is recommending that we adopt a regulation that requires fixtures to meet set flow rate requirements.

Committee Comments:

- Staff needs to research cost and availability of low flow/WaterSense fixtures.
- Toilets with 1.6 gallons per flush are considered to be low flow fixtures and are readily available in the market right now. Why not make the requirement for toilets be 1.6 gallons per flush instead of 1.28 gallons per flush?
- May get a kick back from customers. Many of these green building practices represent a big step in the industry.
- The cumulative costs of this code should not raise the cost of a home so much that it drives out business.

- Need to think about how this requirement will address custom homes that have multiple showerheads?
- Taking away the flexibility of people to choose what fixtures they have in their homes may result in push back. How big of a difference is this really going to make in water use. Staff should focus on bigger areas of water use such as irrigation.
- Inspectors will have to review this in the field. It may not make sense to require this at the time of permit but look for compliance after the building is finished. This will be written in the code so builders will know that they have to comply with certain flow rates for water closets and faucets. Dishwashers and washer /dryers will only be looked at if they are provided and installed by the builder.

The committee agrees that the flow rate requirements are realistic for showerheads and lavatory sinks and faucets. Additional research needs to be done on water efficient toilets to determine the appropriate gallons per flush requirement to include in code.

High Efficiency Irrigation Systems

This section would require that all new, residential landscape irrigation systems be low volume/high efficiency systems that are approved by the City. This would be done by having the builder/landscape contractor submit an irrigation plan during development review. The inspector would approve the installed system prior to issuing a Certificate of Occupancy.

Committee Comments:

- It does not make sense to require that this be submitted at plan review. The builder does not know what the actual footprint of the building will be. This also requires the builder to do landscaping which will add additional cost to the home.
- What would be required if there is no irrigation system installed by the builder or if a home owner decides to install an irrigation system at a later date?
 - Currently, a permit is required for the installation of a back flow preventer for an irrigation system. One option is to have the City increase the existing requirements to include irrigation efficiency and landscape plans.
- The City of Longmont requires that a rain sensor be installed on irrigation systems. That is a quick and inexpensive way to help reduce water use.

- Generally, builders are not involved in the landscaping of a new, single family home. Builders tend to be involved in the irrigation and landscape design for multifamily developments.
- Could this be pushed onto homeowners? When they apply for a permit for a back flow preventer they are required to submit an irrigation and landscape plan.
 - This would require some education for the building department but is feasible.
- The irrigation efficiency component could be tied together with turf area requirements. Require that builders with turf area over a certain limit submit a landscape plan.
- The weed ordinance may restrict the use of some species. For example, Blue Gramma grass is supposed to be taller than 6 inches - but that is limited by the current code. A disconnect exists between what the City requires in its land use code and weed ordinance and the promotion of draught resistant plants. The City's land use code currently requires that turf grass be used. Need to look at the priorities of the City and adjust the Land Use Code accordingly.
- The Larimer County Street standards require grass between the street and sidewalk and other water intensive practices. The green building code and other City standards and codes should support each other.
- Landscaping contractors should be responsible for some of this. They are the ones that are going to be responsible for installing that landscaping. It may be a good idea to certify the landscapers and sprinkler system installer and be licensed by the City. Castle Rock does this.

Resource Efficiency - Felix Lee

Construction Waste Management

Staff is proposing a requirement for construction waste recycling for new construction and major remodels. Builders would be required to submit a recycling plan as part of the permit process and have containers on site to recycle wood, concrete, metal, and cardboard. Potential cost savings may exist. Staff is in the process of researching and quantifying the costs and benefits of construction waste recycling.

Committee Comments:

- One builder collects wood for recycling and trash. Other materials are recycled but the number of containers that can be put on a site can be limited due to space.
- Could get a right-of-way permit to put dumpsters in the street but that can be difficult.
- The construction waste recyclers in Fort Collins will develop recycling plans that cater to a specific project.
- There are programs called roofs to roads that will recycle roofing materials.
- Need to differentiate between 'wood' - Some types of wood are not able to be recycled.
- Security of dumpsters can be an issue if there is not fencing up around the project. If a recycling load becomes too contaminated the hauler may not be able to recycle it.
- Drywall should be recycled - may not have the infrastructure available to recycle this. Additional research needs to be done by staff to determine if this should be included in the requirement.

House Size

Staff is proposing a requirement that would require that houses over a certain size meet higher efficiency requirements.

Committee Comments:

- The cutoff size is important. Staff needs to define what would be included in the house size - conditioned floor space, above grade, etc?
- How would this code apply to remodels and additions?
- It may be easier to have energy requirements for all house sizes with the energy efficiency requirements increasing as the house size increases.
- Quality is important. Many larger houses are built to a better quality so they will have a lower HERS rating anyway. It may not make sense to make this a requirement.
 - o Not all large houses are built to high standards.

- Don't want to create unintended consequences such as people not building houses here but further away which creates sprawl and pollution from transportation.
- This requirement would be easier to apply to new construction but more difficult for remodels. Could address this issue by having a two tiered requirement that would require that the remodel meet a lower HERS rating than the rest of the house which would bring the rating of the whole house down to a lower HERS rating.
- It may make more sense to require ENERGY STAR certification for all houses. Take house size out of the equation.
- If the City is serious about energy and resource efficiency then house size should be addressed in some way in the green building code.

The majority of the committee agrees that house size should be addressed on some level in the green building code proposal.

Advanced Framing

Staff is proposing that advanced framing be incorporated into code. The proposal includes:

- Corners that can be insulated
- Partition wall intersections with exterior walls that can be insulated
- Raised heels on roof trusses
- No headers in non-load bearing walls
- Insulated headers
- Efficient framing at window and door openings
- Engineered floor joists
- Exterior insulated sheathing (shear bracing met with other approaches)

Studies have shown that advanced framing can result in resource and cost savings and other benefits such as energy savings due to better building envelope.

Committee Comments:

- This would make sense if you give the builder options. Have a performance option where the builder can opt out and meet a certain HERS rating. Then have a prescriptive option that applies to advanced framing.
- From a regulatory requirement this is a nightmare due to lack of education of builders. Also, it is difficult to enforce.

- Flexibility is important. Not all of the advanced framing techniques listed would work for EVERY project.
- This would require builders to submit more specific plans to the building department to get a permit.
- Careful about saying that windows would need to be placed along stud layout. Homes tend to be designed from the inside out.
- This could be a recommendation but not something that is enforced. Start by educating people and then look at making it a requirement.
- Raised heels on roof trusses would be something that could be easily enforced. The building department already reviews floor and framing layout.
- Could make a mandatory requirement that allows the builder to pick a certain number of advanced framing technologies to use.
- It would be difficult to enforce and inspect because a lot of the building mechanical, plumbing, and electrical systems are already installed at the time of inspection. It is too difficult to go back and replace that if it does not pass inspection.
- The City requires all framers to be licensed. The City could add advanced framing technology to the certification. Framers must be recertified every two years.

Certified Wood

Staff is proposing that the green building code require certified wood at some level for framing, sheathing, trim/millwork/siding, and cabinetry. There are five certifications that are recognized by the NGBS which include: American Tree Farm System, Canadian Standards Association, Forest Stewardship Council, Program for Endorsement of Forest Certification Systems, and Sustainable Forestry Initiative. Currently, the Forest Stewardship Council is the most stringent of the certifications and is the only certification accepted for LEED credit. LEED for Homes also has a prerequisite that all tropical hardwoods be FSC certified. Staff is working on collecting additional information about certified wood and the current market.

Committee Comments:

- There are places where forests are being managed in environmentally conscious ways by the US Forest Service and that wood is not labeled but in the market. The problem is that it is difficult to tell if a product comes from a sustainable source if it is not labeled.
- Not all of the certifications are created equal. The Sustainable Forestry Initiative and Forest Stewardship Council are the most credible certifications for wood.
- Part of the problem with making this a requirement is that a lot of lumber warehouses do not stock this wood all of the time. Not always readily available so builders need to plan in advance and order wood ahead of time.
- This is an opportunity for market transformation. If certified lumber is required, the demand will increase and the market will catch up.
- Certified lumber costs more than un-certified lumber. Staff needs to make sure this requirement will not substantially increase the cost of a home.
- Need to think about how this would be enforced. If the builder/retailer is giving you a piece of paper, it can only be as good as the company that provides it. Documentation is sometimes difficult. Also, don't want to increase the amount of paper thrown at the building department to get the permit approved. This needs to be a meaningful requirement.
- Council encouraged staff to push forward the resource front which is why this is on the list.

NEXT MEETING

August 25th – R-TRAC Meeting #8:

3-5:30 p.m. City of Fort Collins Streets Facility

Appendix A: Results

Prioritization by R-TRAC

Final Ranking		Total
1	HERS Rating	77
2	Insulation	78
3	Low Water Use Fixtures	90
4	HVAC	106
5	Solar Orientation	111
6	Advanced Framing	112
7	Lighting	112
8	Material Choices	127
9	Air Barrier	129
10	Proper Equipment Sizing	135
11	Reduce Thermal Bridges	137
12	Whole Building Ventilation	140
13	Construction Waste Recycling	143
14	Owners Manual	144
15	Irrigation Efficiency	157
16	Increased Regulations for Bigger Houses	166
17	Turf Area Limits	176

Category/Practice	Rank
Resource Efficiency	
Advanced Framing	6
Construction Waste Recycling	13
Increased Regulations for Bigger Houses	16
Enhanced Durability/Reduced Maintenance	
Material Choices (low maintenance, low UV sensitivity, etc)	8
Energy Efficiency	
Efficient Lighting	7
Solar Orientation	5
HERS Rating	1
HVAC	4
Insulation	2
Air Barrier	9
Reduce Thermal Bridges	11

Indoor Environmental Quality	
Whole Building Ventilation Systems	12
Water Efficiency	
Low Use Water Fixtures (WaterSense)	3
Turf Area Limits	17
Irrigation Efficiency	15
Performance	
Owner's Manual	14
Proper Equipment Sizing	10