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C-TRAC
Meeting # 10
Topic: Code Proposal
Wednesday October 20, 2010, 3 – 5:30 pm

PARTICIPANTS IN ATTENDANCE

Utilities Green Building Team

Amanda Sutton – Green Building Program Coordinator
Felix Lee – Green Building Code Project Manager
Gary Schroeder – Energy Services Engineer – Commercial GB Code Review

Facilitator

Susanne Durkin-Schindler

C-TRAC Members

Company	Representative
Aller Lingle Massey Architects PC	Brad Massey
BHA Design	Angela Milewski
Brinkman Partners	Josh Guernsey
Realtec	Peter Kast
Dohn Construction	Doug Dohn
Institute for the Built Environment	Josie Plaut
Starwood Construction Mgmt	Sandy Willison
Greg D. Fisher, Architect	Greg Fisher
Trane / IFMA	Matt Horner
Architecture West	Steve Steinbicker
PSD	Pete Hall
Bella Energy	Rick Coen

Building Officials

Jurisdiction	Representative
City of Longmont	Chris Allison
City of Fort Collins	Russell Hovland

Key Points:

Updates:

Upcoming Meetings and Events:

- Green Building Program Open House
  November 17th; 4-7 pm at Streets Facility
- City Council Work Session
  December 14th

Green Building Commercial Code Proposal

After working with the C-TRAC to review the IgCC, staff has developed a list of green building practices to include in the commercial code proposal. Some of these practices may apply to the Residential sector as well. The proposed green building code amendments are as follows:

Resource Efficiency		
GB Practice	**Description**	**Intent / Benefits**
Construction & Site waste management	Required recycling for wood, cardboard, metal, and concrete/asphalt. File recycling plan.	Divert waste from landfill. Potential disposal cost savings.
Certified wood (CC)	Require FSC certification on all tropical hardwoods. Dimensional lumber must be certified by FSC, SFI, ATFS, CSA, or PEFC.	Support sustainable forestry
Energy Efficiency & Conservation		
GB Practice	**Description**	**Intent / Benefits**
Energy Distribution Design Requirements	Each electrical panel supplies only one of the following electricity use types - HVAC, Lighting, building operations, or miscellaneous.	Provides means for measurement and verification leading to potential energy savings
Building Envelope	Require continuous air and thermal barrier per ASHRAE 189.1. Appendix B	Saves energy, improves occupant comfort, improves building durability, and reduces pest problems.
Insulation installation standards	Require inspection and rating of insulation installation.	Improves performance of insulation - energy savings, better occupant comfort, better building durability.
VAV fan control	Buildings 20,000 SF and greater shall have VAV with reheat systems. Electric reheat shall use SCR control.	Energy savings, improved thermal comfort
Control of loads in Hotel/Motel guest rooms	Lighting, switched outlets, and televisions will be controlled when guest rooms are unoccupied. HVAC set point will be relaxed by at least 5°F when room is unoccupied.	Energy savings, O&M savings through increased equipment life
On-site renewables (CC)	Require 2% of electricity from renewables, equivalent energy savings, or contribution to a renewables fund.	CO2 reduction
Outdoor lighting controls	Reduce outdoor lighting by 50% X hours after business closes	Electric energy savings, CO2 reduction

Water Conservation		
GB Practice	**Description**	**Intent / Benefits**
Maximum fixture flow rates	See table (based on Water Sense standard)	Water savings
Efficient pre-rinse spray heads	Auto shutoff required with max flow rate of 1.3 gpm for spray heads in food establishments.	Water savings
Once-through cooling prohibited	Prohibits use of potable water for once-through cooling, such as ice machines	Water savings
Water meters for multi-family	Sub-meter water for multi-family >10,000 SF total building	Water savings
Indoor Environmental Quality (IEQ)		
GB Practice	**Description**	**Intent / Benefits**
Air handling system access & cleanability	Provide access to ducts, AHU, fans, coils and condensate pans, etc. for cleaning. Surfaces in air handling system shall be cleanable.	Provides means to maintain long-term air quality.
Air plenum materials	Fibrous insulating materials with exposed friable fibers shall not be installed above suspended ceilings or in air plenums.	Avoid introducing contaminants into supply air.
Protect ducts from contamination during construction	Duct and other related air distribution component openings shall be closed by an approved method to reduce the amount of dust and debris that collects in the system.	Improve initial indoor air quality
Building flush-out	Flush out building contaminants by operating at maximum outside air for a prescribed period of time based on ASHRAE 189.1, 10.3.1.4. Minimum Outside Air setting allowed during FCU Coincident Peak. Note: may need to require form that shows building was returned to normal settings after flush out.	Remove pollutants generated from out-gassing of new materials
Isolation of pollution sources	Requires that print, copy and janitorial rooms and repair garages that are enclosed in a space greater then 200 sq. ft. are fully enclosed and separately ventilated.	Reduce exposure to airborne nanoparticles and VOCs generated by copiers and printers.
Asbestos use prevention	Materials containing asbestos are not allowed	Improved long term health of occupants and construction workers
Material Emissions	VOC and formaldehyde emissions limits for materials such as compressed wood, paints, sealants, adhesives, architectural coatings, etc.	Improved indoor air quality
Sound Transmission	Requirements for exterior-to-interior sound transmission, interior sound transmission, and HVAC sound levels.	Improves occupant comfort and by reducing noise
Daylighting	Minimum of 50% of floor area directly under a roof shall be daylit. Skylight area shall not exceed 3% of total roof area.	Reduce energy use, improve indoor environmental quality. Improved occupant productivity, health.

Commissioning / Operations and Maintenance		
GB Practice	**Description**	**Intent / Benefits**
Commissioning	Provide Fundamental Commissioning per LEED definition with addition of commissioning building envelope materials and assemblies.	Ensure that building systems are installed and operate per owner's intent.
Other		
GB Practice	**Description**	**Intent / Benefits**
Energy assessments for alterations	Energy assessments required prior to building alterations. Assessment provided free of charge by Fort Collins Utilities.	Identify energy efficiency opportunities

It is important to note that these are considerations at this point and may not be included in the final code proposal. Staff is working on follow up research for these green building practices and will revisit the proposal with the C-TRAC in following meetings. The Green Building team has been working closely with the Building Department to discuss implementation and enforcement details for each proposed requirement.

Staff has developed a summary of the green building practices that will be considered for the Green Building Code. This summary is a result of staff research and committee discussions. Some of the items will be pulled out of the code package for City Council to make a decision on. Those items will include certified wood and on-site renewable energy at a minimum.

Construction Waste Management
A recycling plan would need to be filed by the builder and recycling carried out on-site for cardboard, metals, wood, and concrete/asphalt. The initial thought was that requiring a certain percentage of diversion would be too much too fast for the builders who are not doing any recycling at all. Compliance for this requirement could be met by recycling, selling, or donating materials.

Committee Comments:

- Percentage goals for recycling could result in higher recycling volumes from projects and help with tracking and enforcement.
- The major costs of recycling are the cost of tracking. That may result in a large burden for smaller contractors who have never recycled before.
- It would be better to have builders set a goal for recycling instead of setting a requirement.
- Need to have clear definitions of what is going to be recycled. Left over materials from remodels, additions will be recycled.

- Education is going to be important. The building department is going to have to give contractors the information that they need to implement a recycling program. Could also give them the information on how to track their recycling.

Certified Wood
Require FSC certification of all tropical hardwoods. Dimensional lumber would need certified by a sustainable forestry program such as FSC, SFI, ATFS, CSA, or PEFC.

Committee Comments:
- Some projects have seen a price difference of at least 20% when using FSC certified wood compared to conventional lumber.

- This could be a chance for market transformation, it may be more difficult to get these materials initially but it will get easier as the demand increases.

- If certified wood is readily available and cost competitive then why would this not be required?

- The Sustainable Forestry Initiative certification is not as stringent as the Forest Stewardship Council certification.

- The wood is often not stamped so the inspection and enforcement would need to rely on the receipt/paperwork from the lumber yard/contractor.

Energy Distribution Design Requirements
Each electrical panel supplies only one of the following electricity use types: HVAC, Lighting, Building Operations, or miscellaneous.

Committee Comments:
- Would a square footage requirement make sense for this requirement? Should this requirement apply to a 15,000 sq. ft. building as well as a 500 sq.ft. build out?

- Generally, buildings 10,000 sq.ft. and below have all electrical in one panel. This requirement would force the builder to add at least two additional panels.

- The reward for this will be small for a 15,000 sq. ft. building. Typically, larger buildings have separate panels anyway. There should be a cutoff for this requirement.

- This is one of those items that cannot be done later because it would be very expensive. Don't want to miss an opportunity.

Building Envelope
Require continuous air and thermal barrier per ASHRAE 189.1 Appendix B. Testing would need to be done as the envelope is built as opposed to after it is all complete.

Committee Comments:

- This requirement may not make sense for all types of construction and uses. It should not be all inclusive and should depend on the occupancy type and level of conditioning required for the building.

- This is an important aspect of green building and should be included in some way in the code. The building envelope should be considered as part of the mechanical system because it can have a huge impact on how the system performs.

- This requirement is going to take a lot of education for builders and inspectors. The implementation phase will probably be longer than other parts of the code to account for the amount of education needed.

Insulation Installation Standards
Require inspection and rating of insulation installation. In the residential sector there are three grades for insulation that are based on the quality of the installation. Currently, the International Energy Conservation Code (IECC) only has insulation requirements for commercial buildings based on the type of insulation not how it is installed. It is not uncommon to see large gaps in insulation installation which can have a large impact on the performance of the building.

Committee Comments:
- The implementation of this requirement could be tricky for exterior insulation. On brick buildings the exterior insulation is installed by the mason and is generally installed one piece at a time.

VAV fan control
Buildings 20,000 sq.ft. and greater shall have VAV with reheat systems. Electric reheat shall use SCR control. Building size does have an impact for this requirement.

Committee Comments:

- This requirement makes sense for certain building types and sizes. It may not make sense to force a building to use VAV systems. Retail units like to have their own system for their space.

- The VAV systems may not make sense for all applications. It may be better to have something that addresses VAV fan unit controls when a VAV is installed.

- It may be better to mandate a building management system for buildings of a certain square footage that includes VAV fan controls in addition to other parts of the building systems.

On-Site Renewables
Require 2% of electricity from renewables, equivalent energy savings, or contribution to a renewables fund. This item will be given to council as an option for discussion.

Committee Comments:
- What does the equivalent energy saving component look like? How will they know and prove that?

- The code requirements are getting tight enough that 2% energy savings is going to be more difficult to achieve.

- This may be something that is between the building owner and utility company. The builder would not necessarily have control over the system put on the building.

- This is a good option for incentives. Ask council what they are willing to contribute for incentives?

- Energy costs are not going to stay the same. They are going to go up and that will reduce the impact.

- Should not require energy modeling for everything.

Once-through cooling prohibited
This requirement prohibits the use of potable water for once-through cooling, such as ice machines and refrigeration equipment.

Committee Comments:
- There is a trade off between energy efficiency and water efficiency. The water cooled ice machines are more energy efficient than air cooled machines.

- What is the bigger picture value to saving some water vs. saving energy that is needed to cool the hot air coming out of the machine?

Water Meters for Multi-family
This requires that water is sub-metered for multi-family buildings greater than 10,000 square feet.

Committee Comments:
- Who is going to read the meters? The requirement is that the meters are included not that they are read. This gives the capability for the owner to make the tenants responsible for their water use.

- This could help property managers identify leaks or problems and know which units the issue is occurring in.

- Sub metering is starting to become the standard in the industry because it provides additional information to building owners and property managers.

- This is something that is already done commercially. Tenant uses can be so different in a strip mall that sub-metering is necessary. This is done anywhere the uses are going to be different in each space.

Building flush out
This requires that buildings are flushed out to rid the building of contaminants by operating at maximum outside air for a prescribed period of time based on ASHRAE 189.1, 10.3.1.4. Minimum outside air setting allowed during Fort Collins Utility coincident peak. The City may need to require a form that shows that the building was returned to normal settings after flush out.

Committee Comments:

- If the building is a multi-tenant building there will be carpet and furniture added at a later date. Would each new tenant finish need to go through a building flush out?

Material Emissions
This requires that VOC and formaldehyde emissions limits are met for materials such as compressed wood, paints, sealants, adhesives, architectural coatings, etc.

Committee Comments:
- LEED only requires emissions limits on materials that are applied on-site.

- The research on the low emission products and tracking takes a lot of time for LEED projects. The City should determine exactly how builders would show what materials they are using.

- Would the documentation for this be required on the drawings? It is difficult to know what types of paints and flooring are going to be used in a building at the time of development review.

- This requirement needs to have clear expectations so builders know what they need to do.

- Could outline on the specs what the maximum VOC limits are for what materials. Don't need to get too specific but show what is required.

- The honor system would need to be used for this. It will be difficult to inspect and verify this requirement. Spot checks could be done if necessary.

Sound Transmission
This would set requirements for exterior-to-interior sound transmission, interior sound transmission, and HVAC sound levels. Staff met with an acoustical engineer who is going to assist with developing the specifics of this requirement. Staff will finish compiling this information and then send it to the group.

Committee Comments:
- It can be difficult to do this correctly.

- This can go hand in hand with continuous air barrier. If you have a continuous barrier, you should have an easier time meeting the requirements.

- Sound transmission requirements exist for multi-family in the 2009 building codes.

Daylighting
Minimum of 50% of floor area directly under a roof shall be daylit. Skylight area shall not exceed 3% of total roof area.

Committee Comments:
- Staff needs to be careful about not limiting projects that are doing other forms of daylighting on a project. Top lighting is not usually used in daylighting design projects.

- The 3% limitation seems like you are limiting some building designs. Could have an alternative compliance path where the builder can show that their mechanical systems are more efficient if they want to have more skylight.

- There are other materials available that provide skylight with minimal heat gain.

Existing Buildings: Energy Assessments for Alterations
Require energy assessments prior to building alterations. Assessments are provided free of charge by Fort Collins Utilities. The intent of this requirement is that the building owner will receive information about areas that are inefficient in the building so that they can fix those if necessary.

- **Overall, the TRAC was receptive to this idea.**

Comments on the Code Proposal Overall:

- Some of the items are very important and some are becoming the building standard. It would be interesting to do a prioritization exercise to identify key items from the proposed code that should not be discarded. Incentives are important as well as implementation and enforcement.

- This is the beginning of a cultural shift in the industry. Hate to carry a stick around to make people do things but in today's economy it may be necessary. This is a good place to start. The biggest potential in our community will be in the existing building side of things. The requirement for energy assessments prior to alterations is a good start. That will help building owners see where the improvements can be made.

- Construction waste management, building envelope, insulation, etc. are all important to green building. Some good steps have been made but I still worry that this is not enough to really catch us up but making us less behind. When this is presented to Council, Staff should focus on other values to society not just capital investments.

- This is starting out at a good spot. It is taking a step in the right direction but not adding too much burden to economy. Some more development of first costs and savings is important.

- The City is headed in the right direction. Stakeholder process is important and staff did a great job of including the community.

- We are up in front at looking at this type of code. This is a strong beginning to create a green building code. Glad IGCC was thrown out and that Staff was able to see how the code could apply additions, remodels, etc. Also glad

staff looked at local impacts to builders. Didn't want the code to be too cumbersome.

- This is a fragile place in the economy. This proposal is a positive start. Education is important. The market is going this direction. As long as builders know what to do and have all of the available resources, this is a good start.

- This is a good common ground for items that have a lot of impact. Building envelope is critical to the GB code. Many builders are uneducated about it and it is being done wrong over and over again. Education is important for these items. Worried that the City is not going to fund the building department to implement this code. You should not necessarily have to save money to do the right thing.

- Building envelope is huge! From an inspection standpoint staff has been learning how the systems integrate. It is going to take a lot of time and training to understand how it all works. The process does work but sometimes it is a cultural change that you can't really put a solid savings to. Integrated design is important!!!

- Don't want to be so far out that we get ourselves in trouble. This puts us in front but not too far in front.

- Wish that there was more of a push. The challenges that we face as a society are so big and the changes that we are proposing are so small. It is difficult to create change in the current system because we need more radical change. This is a step in the right direction but it is not big enough.

NEXT MEETING

November 30, 2010 – C-TRAC Meeting #11: Code Proposal Review
3-5:30 p.m. City of Fort Collins Streets Facility