

# BLUEPRINT



Brad

Ruben



Mark

## SEEKING EXCELLENCE

Brad Remp, Ruben Barrera and Mark Berg talk about the **Community Energy Efficiency Program**. The second in a two-part series – page 4

## COMPLAINTS

and how the Commission pursues them – page 2

## Questions and Answers

### Residential



**Q**

*Does fiberglass insulation have to be kraft faced for residential compliance?*

No. Unfaced insulation is completely satisfactory in most areas of the state, and usually will be easier to install to establish a friction-fit between framing members without leaving gaps. If the insulation is kraft faced, the paper side must face the conditioned space to avoid moisture problems.

**A**



**Q**

*I want to remodel the lighting in my kitchen, replacing the old built-in fluorescent “light box” lighting system with recessed can lights. Do the Standards have any requirements for this alteration?*

**A**

Yes. Section 152(b)1 of the Standards requires the newly installed kitchen lighting equipment to meet the applicable requirements of Section 150 (k), including an efficacy of not less than 40 lumens per watt. The lighting must provide a sufficient light level for basic kitchen tasks, and must provide a uniform pattern of illumination. Pin-based fluorescent lighting systems meet the lumens per watt requirements. Screw-based fixtures that accommodate incandescent bulbs,

even if they are equipped with screw-in compact fluorescent lamps, do not qualify. Also, the general lighting must be switched on a separate switch from the non-high efficacy lighting. For additional guidance on general lighting in a kitchen please refer to *Blueprint # 62* at:

[www.energy.ca.gov/efficiency/blueprint/pdf/2000\\_62\\_SPR\\_BLUEPRINT.PDF](http://www.energy.ca.gov/efficiency/blueprint/pdf/2000_62_SPR_BLUEPRINT.PDF)





## COMPLAINTS

### and How the Commission Pursues Them

A

*few years ago there was a construction defect lawsuit settled for \$55 million in the Coachella Valley. Though the bulk of the money paid by the builder went for things unrelated to the Energy Efficiency Standards, it got started because someone could not cool off a back bedroom. This is a problem that could be avoided through compliance with the Energy Standards, particularly third party verification of duct sealing.*



Let's take a look to see how the California Energy Commission is trying to help the industry avoid such unpleasant situations.

Recently, a builder had chosen the option of "sealed ducts" for his compliance with the *Energy Efficiency Standards for Residential and Nonresidential Buildings* at a subdivision, again in the Coachella Valley. In the first phase of the subdivision, the building department inspector had asked the superintendent on the jobsite for information regarding the HERS rater that the builder was planning to use. This is exactly what the inspector should have done. He was

attempting to do his job.

Right about that time (March 2004), a staff member of the Commission visited the building department to discuss information received by the Commission that some of the Coachella Valley jurisdictions were not thoroughly enforcing the third party verification requirements. The inspector assured the Commission staff that he, the inspector, was "on top of the situation" and was diligently enforcing the Standards.

In late July the Commission was told by a Coachella valley resident that there were literally thousands of permits — issued or in the process of being issued — in the jurisdiction in question. It was very likely that all or most of those houses would need to use third party verification of duct leakage for compliance credit or they wouldn't comply. We were also told that this particular jurisdiction was not enforcing this code item on any of the houses currently being built.

This obviously conflicted with the information previously given to Commission staff. Therefore, an e-mail was written to the jurisdiction, describing the complaint by the Coachella valley citizen. Notified by the building official, the inspector subsequently called the Commission. The inspector said that he thought the Commission should make duct testing mandatory. He said that as soon as he saw the e-mail from the Commission he went to the job site of the builder who had been non-responsive regarding getting the required HERS rater

verification and the CF-4R signed-off. This time, the inspector said, the builder promised to get a HERS rater and comply with the law.

Knowing that the inspector's time is very valuable and the number of houses under construction was daunting, Commission staff asked if the inspector would agree to having a local HERS rater known to the building department make an appointment, and free of charge, look over all the projects. The HERS rater would make sure that there were no errors on other projects' energy documentation and provide demonstrations, for the inspector and the rest of his staff, of duct blasting and other HERS verification procedures. The inspector agreed.

When informed that the building department would like to have some training, and have the public-record plans reviewed for compliance, the HERS rater was happy to accommodate the request. He set up a demonstration and checked all of the energy documentation for the jurisdiction, making sure that site inspectors were correctly notified by plan check when CF-4R's were required on other projects.

As a result, the rater found out that there were several other subdivisions that required HERS field verification. The inspector and his staff were unaware that it had been missed in plan check and were grateful for the HERS rater's assistance. The HERS rater also demonstrated to the building department his competence, ability, and willingness to be of service to the building department.

Additional notices were given by the inspector and his staff to local builders who had chosen, as an option in the performance compliance approach, to use third party verification to achieve compliance with the



Standards. These builders were told to hire an independent third party HERS rater according to the Commission's requirements, and to have the building inspectors notified when the rater was testing so the inspector could observe the tests. The builder was also given the choice of revising the energy calculations to try to achieve compliance in some way other than through measure requiring third party verification.

Everybody won in this complaint investigation. The Commission is not interested

in penalizing building departments, only in helping them enforce the Standards. If you are a HERS rater, keep informed of what is happening in your area. If you suspect that a subdivision being built should be getting tested, check with your provider first (CalCerts or CHEERS) to make sure that another rater doesn't already have the job, then check with your local building department.

Talk with the building department staff about the importance of third party verification. Offer a free demonstration of the tools you use to verify compliance. Ask if you can look at the documents for the subdivision in question. Help the building department enforce the code. If, for some reason, you are unable to resolve the matter through your own efforts, contact the Energy Commission with your concerns. We will follow up, find out what is going on and assist the jurisdiction to enforce the law.

If, on the other hand, you are a staff person for a building department and you are having difficulty enforcing the third party verification, contact the Commission. We will make an effort to help in any way we can.

*For more information, contact the Commission's Hotline at the special telephone number for building departments only, 1-800-PLAN-CHK (800-752-6245) or John Eash at [jeash@energy.state.ca.us](mailto:jeash@energy.state.ca.us).*

# SEEKING EXCELLENCE

*The fourth in a series of articles about building department employees, builders, energy consultants, HERS raters and others who are making exemplary efforts to achieve energy efficiency in buildings.*

**Part two of two:**

*In this issue we finish a two-part article on the Community Energy Efficiency Program (CEEP). In this voluntary program, builders, energy consultants and building departments work together to improve the quality and energy efficiency of the houses they produce. There are many benefits for the groups involved, as well as for the communities in which they build.*

*In the second installment we speak with three building officials for their viewpoints on how the program works for them*

*Brad Remp,  
Building Official with the  
City of Chula Vista*

**Blueprint:** *How did the CEEP program come to your attention?*

**Remp:** First, it is important for us that the City of Chula Vista is recognized as a leader in energy conservation. In fact, we were one of the few cities in the world that was a party to the Kyoto Accord to avoid Global Climate Change by committing to reduce CO<sub>2</sub> emissions. We have an active CO<sub>2</sub> reduction plan that includes energy conservation measures in new construction.

So here's how CEEP came about for Chula Vista: approximately four years ago the city manager's office applied for and received a Federal grant from the EPA to help us move forward on a CO<sub>2</sub> reduction plan. A major component of that was to increase the energy conservation measures that were going to be introduced in new construction, primarily residential. We realized we had some real opportunities because our new residential growth was exploding. We did a little research to figure out who was involved in a program like the one we envisioned. At that point we crossed paths with George Burmeister and the representatives from ConSol, and we found them to be extraordinarily helpful because of the contacts they had, and they were enthusiastic about trying to find a way to help us. We ultimately generated the GreenStar Building Energy Efficiency program, which makes sure that we design buildings and construct them in such a way that they substantially exceed the Title 24 energy requirements. In the beginning we just paired up with ConSol and the CEEP program.

The expertise that ConSol and George brought to the table was particularly beneficial. They offered a number of training programs for us. They were willing to listen to us as building officials, and address our needs to be able to sell a program to builders and to the rest of the community.

Probably the one thing that Chula Vista stands out for is that, as part of the CO<sub>2</sub> reduction program, our planning process includes an air quality management review. As a result, all of our major projects have to put together an air quality management report.

One of the ways in which we were able to help sell the program to developers was to say, if you voluntarily agree to commit to having at least 50 percent of your houses comply with a GreenStar program, then we will automatically consider that the significant portion of your

responsibilities on the planning side for air quality management would be met.

What we were really trying to do was start the discussion at the very beginning of the planning process, when more options are available. This meant we had to get outside of our perspective as building officials and really work with our planners and the developers' advance people to encourage them to consider energy conservation at the very beginning of the project. But we had to find some way to reward them for doing it.

**Blueprint:** *What did you try to accomplish?*

**Remp:** Well, there wasn't a template to follow, and that's a scary thing in the planning arena. As a developer, you can throw an awful lot of money at something in hopes that ultimately it will be approved. This program gave some predictability. That's what developers really wanted – predictability, so they could anticipate early on what it was going to cost, instead of finding out at the end of the process that they'd committed to something that they really didn't understand and that would have a significant financial impact on them. Predictability was a real reward for them.

**Blueprint:** *So – predictability – having a concrete plan that guaranteed meeting air quality standards – was a terrific reward for the developers. Did you offer any other incentives?*

**Remp:** Yes. From the more practical standpoint of the plan check, inspection and approval process, we made a commitment early on that if they conformed with one of our approved programs, we'd expedite plan check. We would take at least a week off plan check.

**Blueprint:** *Out of how many weeks?*

**Remp:** Typically, three weeks. We would reduce that to two weeks, and once we started the program, we found we were doing even better than that. That exceeded many builders' expectations. And it wasn't that difficult for us as a city – to get building and planning and engineering and fire, everybody who had to review plans – to get all of them on the same track. The Chula Vista City Council had made it quite clear that we are an environmentally sensitive community; this is one of the ways we could demonstrate that to the people we work with.

**Blueprint:** *Are there other programs under GreenStar than just CEEP?*

**Remp:** We've got three different ways to comply: the CEEP program based on ComfortWise was the real kickoff; SDG&E's Energy Star program, which offers a financial rebate; and the third, a custom designed program that documents how the structure will exceed Title 24 requirements by 15 percent.

**Blueprint:** *How many homes have been built under GreenStar?*

**Remp:** Over the last approximately three years we've seen 2,400 units, some of which are under construction right now. We have one project where Steve Padilla, Chula Vista's mayor, is buying a house.

**Blueprint:** *Do you think these programs produce a better built product?*

**Remp:** Absolutely. And one of the other major benefits — I get feedback from my staff all the time on this — is that staff appreciated the training that was offered through the program.

**Blueprint:** *That's for both plan checkers and field inspectors?*

**Remp:** Right. We had ConSol come here and try out their new training program, so we had a chance to participate in how it was crafted. The



*“Too often we don’t realize that, from a day-in and day-out standpoint, we can make a much bigger impact on the overall effectiveness of a building by concentrating on things like energy conservation – elements where you don’t have to wait for a disaster before you see the benefit.”*  
— Brad Remp

feedback from the staff — both the plans examiners and inspectors — was very positive. They appreciated the technical way it was presented, and they came away with a much better understanding.

For developers who participate in the program, we also find that the quality of the plans is much greater. Now we're dealing with professionals, in most cases mechanical engineers, so that the level of detail we have to go through in a plan check is significantly less. In the event that we do find issues, they can be resolved very quickly, very professionally. And we appreciate it.

**Blueprint:** *Did you have someone quantify energy savings and then translate them into CO<sub>2</sub> savings?*

**Remp:** That's where ConSol really helped us out. We weren't exactly sure how to go, but they put us in touch with some

outside consultants. They helped us separate things that were doable from things that were just not worth pursuing.

**Blueprint:** *And that was important?*

**Remp:** Yes, we didn't want to over-promise on the program. The guys from ConSol really helped ground us, helped us know that our expectations

in some cases were well beyond anything that could be achieved. As a result, we became more realistic. We ultimately ended up with our GreenStar program, a CEEP-based program, so that we could actually get those kinds of results. They were measurable and we were prepared to do some kind of a monitoring program in the future.

**Blueprint:** *One thing that George Burmeister brought up: City Councils value programs that cause energy bills to be less, leaving residents with more pocket money. George calls it “money for the malls.” Homeowners get to spend more money in the local economy so there’s a community benefit. Do you have any sense of that?*

**Remp:** Anything that cuts the cost of home ownership helps. Many of the lending companies

are recognizing this, and will actually give home buyers a larger loan. The lenders realize that with this program the buyer’s overall monthly energy payments will be lower.

There’s another societal benefit. Much of what we do as building officials, inspectors, and plans examiners is making sure buildings will comply in the event of a major catastrophe – a fire, or an earthquake, or a flood or something like that. Too often we don’t realize that, from a day-in and day-out standpoint, we can make a much bigger impact on the overall effectiveness of a building by concentrating on things like energy conservation – elements where you don’t have to wait for a disaster before you see the benefit. You see it day in and day out ... you could just spend a little more time and get it right.

## THE FIVE ELEMENTS OF CEEP

- 1 The house’s HVAC system must be designed to requirements of the Air Conditioning Contractors of America (ACCA), Manuals J, D, and S. The design must be stamped by an engineer registered in California, and the system must be installed according to the design.
- 2 A computer analysis must show that the house meets Energy Star requirements.
- 3 The house’s ducts must meet the Energy Commission’s tight duct requirements.
- 4 The Building Industry Institute’s “Scopes of Work” must be followed for insulation, windows, and HVAC.
- 5 A third-party verification of all energy features must take place, including duct blaster and blower door tests and inspection of caulking, insulation, water heating, and more.



*Ruben Barrera,  
Chief Building Official, City of Santa Clarita  
at “The Colony” – a completed Centex Homes  
CEEP project in Santa Clarita.*

**Blueprint:** How did the CEEP program come to your attention?

**Barrera:** Before it was officially the CEEP program, I received a call from George Burmeister who was interested in exploring such a program. He asked me if I was interested in participating on the advisory committee for the California Building Industry Association (BIA) group which was thinking about having BIA and building jurisdictions partner in an energy efficient building program.

**Blueprint:** Did you already have an interest in such a program?

**Barrera:** Yes. The City of Santa Clarita did have a

request by the City Council to explore opportunities to create green building programs, or practices, or policies. But we didn't really have anything in the works along the lines of CEEP. When I received this call from George and he explained what they wanted to do, I said, "It fits right in with what we're exploring. It's a perfect opportunity."

**Blueprint:** *How long ago was that?*

**Barrera:** That must have been five or six years ago, right at the beginning. I shared my ideas and had several meetings with advisory group participants; we felt that if some of those ideas were molded into the program, it would work for us. So we put something together that I took to the City Council and other department heads and got buy-in right away. We also went through the process of taking it before a public meeting of the City Council.

**Blueprint:** *Did you get much feedback from the public at that meeting?*

**Barrera:** A few contractors, and developers attended and gave us their insight and their feedback. George Burmeister put together an informational PowerPoint presentation. The developers thought it was an interesting concept. Some said if there were incentives, and those were just right, they would be very interested in participating. They gave us some ideas of what those incentives might be. Reduced plan check time was a big one because it would really save them a lot of money in the end.

**Blueprint:** *In addition to the reduced plan check time, what other rewards were they interested in?*

**Barrera:** One of the things we offered was a 10 percent discount on their plan check fees. We

*"...this is what we intended to do all along: create incentives for developers to participate voluntarily, so that slowly we'd get a lot of participation. As buyers become more aware, market conditions change so that developers will want to build beyond the energy code, only because the market demands it, not because we're creating incentives."*

*—Ruben Barrera*

limited it to four houses per development or a maximum of \$1,000 total plan check fee credit. We did that as an initial incentive program for two years. After that we only maintained our plan check turn around time incentive.

We also said we'd give them recognition through some kind of public event that would acknowledge their efforts. It was free publicity. The main item, though, was the reduction of plan check turn-around-time because that really turned it into dollars.

**Blueprint:** *By how much were you able to cut that time for them?*

**Barrera:** Generally speaking, it was by 50 percent or more.

**Blueprint:** *When you got CEEP under way, did you require all builders in your jurisdiction to be part of the program?*

**Barrera:** No, we made it strictly voluntary.

**Blueprint:** *How many homes have been built under the CEEP program in Santa Clarita?*

**Barrera:** We're estimating between 300 and 400 homes.

**Blueprint:** *How difficult (or easy) is it for your department to oversee the CEEP requirements?*

**Barrera:** All of the CEEP requirements were fairly easy from our perspective. We were just looking for reports and completion certificates, and we were done.

**Blueprint:** *Do things go more smoothly through the permitting and field checking processes?*

**Barrera:** I think they do because the developer provides very well-detailed plans and mechanical drawings prepared by an engineer. We were a little concerned about that early on. What's this going to do to our process? How's it going to

impact our staff? How much time is it going to demand from our inspectors and plan checkers? After we did our first CEEP home, we realized it was a fairly easy process to implement.

**Blueprint:** *Do you think the homes in this program were better built than other homes?*

**Barrera:** I really do think so. I think that the developers that were willing to go with CEEP were looking for more quality in their homes and were willing to spend a little bit of extra time and money to make it happen. I think the incentives helped, but I think, in the end, they realized it was something they wanted.

**Blueprint:** *Do you know in advance when a CEEP project is coming?*

**Barrera:** Yes, because we ask the developer to submit a letter of intent to participate in CEEP. If we're going to give them a quick turnaround, we want to make sure that they are committed to it. Once they submit the letter, which comes to me, we start planning ahead to process the project as a CEEP project.

**Blueprint:** *We're interested in hearing about success stories that came out of this either for the builders, for your department, or for your community.*

**Barrera:** Before the real estate market got so hot in Santa Clarita, one CEEP tract really sold out quickly, faster than was expected even by the developer. It ended up being a very high quality construction job. People were just impressed with the homes. The developer used the fact that they were in the CEEP program in the sales literature.

Another success for us was that Santa Clarita was one of the first cities that adopted CEEP, so it made us look very good. It showed we were being proactive with our policies, and I think it put a positive light on our building department. Any positive press we can get is always good; you know, we're in the enforcement business.

**Blueprint:** *You get knocked around some?*

**Barrera:** We get knocked around quite a bit. When we originally came to the City Council with the CEEP concept, they really weren't expecting it. I think they felt, 'Wow, we're glad you're doing this, let's approve it.' Then of course, the Energy Commission came later (1999) and awarded the city with an ACES award [Assuring Compliance with the Energy Standards] and again that reinforced the whole program and brought to light again to the City Council that it was successful.

There was another good thing that happened. When those blackouts came in 2000 and 2001 with the energy crisis, we were able to say, "We already have CEEP; we've already done something before blackouts even happened." Again, it really made us look proactive ... bragging rights, you know? It was a non-tangible benefit that we weren't really anticipating.

Another thing I noticed, maybe a year and a half ago - I was in the LA County unincorporated area, looking at some new model homes. I noticed

that a lot of the homes being built in this new tract in the County area (outside of our jurisdiction) were being built to CEEP. At the time the County did not have a formal CEEP program. I think the developer was doing it anyway.

**Blueprint:** *Do you think the builder was just interested in building that way?*

**Barrera:** Yes. And this is what we intended to do all along: create incentives for developers to participate voluntarily, so that slowly we'd get a lot of participation. As buyers become more aware, market conditions change so that developers will want to build beyond the energy code, only because the market demands it, not because we're creating incentives. And it seemed that in this development it was beginning to happen.



*Ruben Barrera and the City of Santa Clarita's ACES (Assuring Compliance with the Energy Standards) award for their pioneering effort to launch CEEP*

# BLUEPRINT

*Mark Berg,  
Riverside County  
Building and Safety,  
Principal Building  
Inspector*



**Blueprint:** *How did the CEEP program come to your attention?*

**Berg:** Approximately two years ago, in 2002, the former Director of Building and Safety came to me about the CEEP program. He had already received approval from both the Board of Supervisors and County Council for joining the CEEP program in February 2001. He asked me to take it over and start working on it.

**Blueprint:** *How hard was it to 'sell' to the Council and Board of Supervisors?*

**Berg:** Not hard at all, they wanted the department to explore different opportunities to create a building program to help build more energy efficient communities. We didn't really have anything in the works along the lines of CEEP, other than the ComfortWise program that was already in place. The Board of Supervisors are very customer service oriented, and they really want the department to try to find ways to help the development community out. They tend to do everything they can to get projects going in the right direction from the start.

**Blueprint:** *The City of Chula Vista offers reduced plan check time to the developers on CEEP projects. Do you at Riverside County do the same?*

**Berg:** Yes we do. We will expedite the plan check

process which will usually cut about a week or two off the plan check process. Our normal plan check is four to six weeks now; cutting that much time off the plan check time really helps out with the schedules of the development community.

**Blueprint:** *Does it seem that a program like CEEP results in better-built homes?*

**Berg:** I really think so. I feel that the developers that went with the program were looking for more quality in the homes they were building and were willing to spend a little bit of extra time and money to make it happen. Looking at the five CEEP requirements for the program, which includes tight duct systems and the HVAC system using the ACCA design method, we are getting a better product. Having the HERS verification along the way assures us that we are getting good compliance with the California Energy Standards.

I received a call from George Burmeister after I took over, and he explained to me what they wanted us to do for the program, I said, "It fits right in with what we want to accomplish for the community from the Board's standpoint."

**Blueprint:** *Do you have any sense that your plan checkers or field inspectors involved with the CEEP program have become more aware of energy features in homes and the quality of*

installation of items such as insulation?

**Berg:** In my opinion, yes, because CEEP goes above the normal requirements for energy for the state. The plan checkers are required to verify some of the upgrades like better windows, insulation and tight ducts during the plan check process and again in the field during the inspections.

**Blueprint:** Before CEEP, was your jurisdiction as aware of the energy code when your field inspectors and your plan checkers were looking at those features?

**Berg:** Yes, especially with AB 970 and new stricter requirements in 2001 Energy Requirements. We started do some ride along with our building inspectors, showing them the proper insulation requirements, making sure we were getting the proper solar heat gain coefficient and U-Factors on the windows; making sure the contractors were placing the polyeal foam in the right locations around windows, doors and plate penetrations into the attic area. At final inspection, we made sure the building inspectors were checking that the proper equipment was being installed according to the CF-6R forms.

We were also requiring that the Insulation certificates were posted in the garages for the building inspector to review. I was hired to be the Chief Plumbing, Mechanical, and T-24 Energy inspector here at the County of Riverside, and we were starting to do a lot of training to raise awareness with our plan checkers, to make sure we got the proper energy documentation at plan check submittal time. So we have been trying to do our "due diligence" to try to meet the strict energy requirements.

**Blueprint:** What motivated that?

**Berg:** What really brought it to my attention was talking with Scott Johnson approximately 10 years ago. I've known Scott for many years. I first met Scott when I worked for the City of

*"I can testify myself that the stricter requirements work, I just replaced all the windows in my house, went to low-e vinyl windows, and re-insulated the ceiling. My electricity cost has gone down significantly over the last two months."*

— Mark Berg

Temecula, and Scott did a demonstration on the duct blasting system and showed us how we were not meeting the minimum state requirements for duct leakage and that insulation installation should be installed to achieve it's intended benefit.

Several years later I was working for the City of Irvine, and Scott came down several times and provided a lot of teaching about quality home energy

construction using diagnostic testing and verification. Scott is very knowledgeable in this area.

**Blueprint:** And you do this because you see some benefit?

**Berg:** I definitely see benefit. With the increased better insulation in the walls and ceiling, better windows with the low-E glass, etc., this helps reduce the amount of summer heat going into the house, which in turn reduces the energy cost to the homeowner. Because of the reduced heat going into the house, the HVAC mechanical equipment does not have to work as hard to cool down the houses in the heat of the day. With the average temperatures we have during the summer in Riverside County, any reduction of energy cost that we can pass on to the homeowner helps. I can testify myself that the stricter requirements work, I just replaced all the windows in my house, went to low-e vinyl windows, and re-insulated the ceiling. My electricity cost has gone down significantly over the last two months.

**Blueprint:** For air conditioning?

**Berg:** Yes my HVAC system does not run as much during the day as it used to before changing the windows and re-insulating the attic. I definitely noticed a difference in my electricity cost, which has gone down significantly over the last two months. I know, I've done it myself and I can tell everyone the benefits of doing the program.

*The California Energy Commission does not endorse any products, supplier, manufacturer or builder. The text in this interview is meant to be informational and not all inclusive.*

# SWITCH!

## TO THE 2005 RESIDENTIAL LIGHTING REQUIREMENTS

*The Energy Commission and the California Building Industry Association are encouraging builders to be early adopters of the residential lighting portion of the 2005 Energy Efficiency Standards.*

P

rior to the October 1, 2005 effective date of the new Standards, home builders who comply early with the residential lighting standards portion of the *2005 Building Energy Efficiency Standards* will receive a performance standards compliance credit. They can use the credit as a trade-off using the Performance method of compliance to compensate for features that would otherwise cause their houses not to comply.

The credit is 1.5 kBtu/ft<sup>2</sup> for eligible residential buildings. To achieve the credit the houses must be field verified by a certified HERS rater to comply with the residential lighting standards portion of the *2005 Building Energy Efficiency Standards*, in combination with the mandatory lighting requirements in the current Standards. The building department should not approve the building until they receive a copy of the Supplement to Form CF-4R that has been signed and dated by the HERS Rater.

The new limited-term Compliance Option for early compliance is available for complying residential lighting systems for which a building permit application is submitted prior to the October 1, 2005, effective date of the 2005 Standards. Information about this option is available on the Commission's website at: [http://www.energy.ca.gov/2005\\_standards/early\\_compliance/index.html](http://www.energy.ca.gov/2005_standards/early_compliance/index.html)

### Air tight requirements: Inspection Protocol for Recessed Luminaires in Insulated Residential Ceilings

Starting on October 1, 2005 for all residential applications, and starting immediately for those projects applying for the residential lighting early compliance credit, luminaires

recessed in insulated ceilings must:

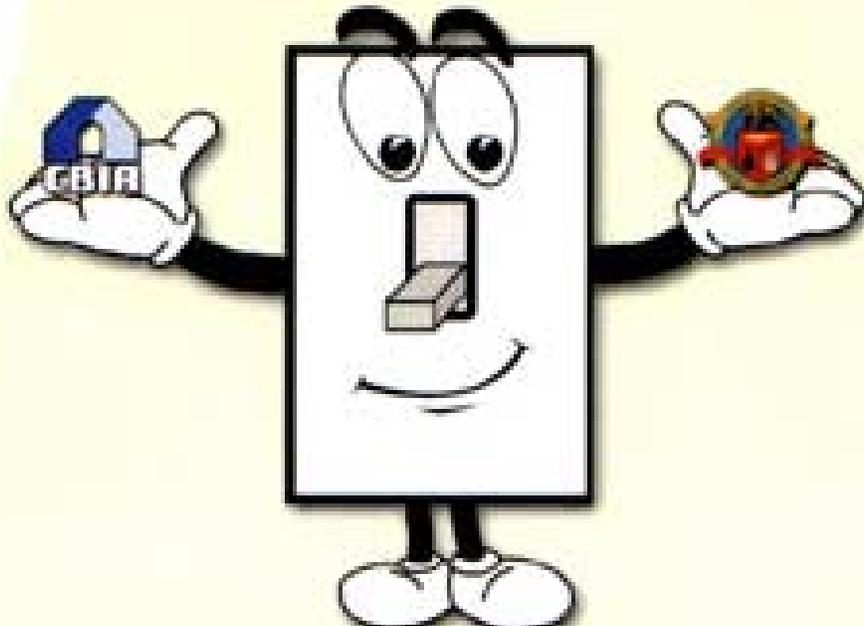
- ▼ be IC rated
- ▼ have a label certifying airtight or similar designation to show air leakage less than 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283. The label must be clearly visible for the building inspector, and
- ▼ have a gasket or caulking between the housing and ceiling to prevent the flow of heated or cooled air between conditioned and unconditioned spaces.

The ASTM E283 certification is a laboratory procedure that measures leakage of the luminaire housing or, if applicable, of an airtight trim kit. However, the lab procedure does not guarantee that the luminaire is installed properly to be airtight. The luminaire manufacturer must provide instructions that explain how the entire assembly is required to be installed to achieve an airtight installation.

The intent of the Standards requirement is to have certified airtight luminaires installed so as to prevent the flow of heated or cooled air between conditioned and unconditioned spaces. All air leak paths through the luminaire assembly or through the ceiling opening must be sealed. Leak paths in the installation assembly that are not part of the ASTM E283 testing must be sealed with either a gasket or caulk. For example, for assemblies where a certified airtight luminaire housing is installed in an adjustable mounting frame, all air leak paths between the certified airtight luminaire housing and the adjustable mounting frame must be sealed, either with a gasket or caulk.

# SWITCH!

To the  
2005 Residential Lighting Requirements



**NOW!**

For  
Early Adopter  
Lighting Credits

*The poster for the program.*

**Q** *How does the early compliance option work? Who gets the credit?*

**A** To qualify for the early compliance credit, one of the Energy Commission approved computer compliance programs must be used. A C-2R form will be generated by the computer program. On the C-2R form a “standard” design will be compared to the “proposed” design. The “standard” design

generated by the computer program will establish an energy budget in kBtu per square foot. Without the early compliance credit, the proposed design cannot use more energy (kBtu/ft<sup>2</sup>-Yr) than the standard design. However, with the early compliance credit (until October 1, 2005) the proposed design can use as much as 1.5 kBtu per square foot more than the standard design, as long as all of the requirements of the early compliance credit are met.

# Submitting Adjustments to Default Outdoor Lighting Zones:

## Lighting Zone Adjustments by Local Jurisdiction

**T**

he Energy Commission adopted changes to the Title 24, Parts 1 and 6, Building Energy Efficiency Standards on November 5, 2003. These new Standards are scheduled to become effective on October 1, 2005. Included in the changes to the Standards are new requirements for outdoor lighting. The Standards contain lighting power allowances for newly installed equipment and specific alterations that are dependent on which “lighting zone” the project is located. Existing outdoor lighting systems are not required to meet these lighting power allowances. However, alterations to existing outdoor lighting systems, which increase the connected load, or replace more than 50 percent of the existing luminaires, must meet the lighting power allowances for newly installed equipment.

The Standards base the lighting power that is allowed on how bright the surrounding conditions are. As eyes adapt to darker surrounding conditions, less light is needed to properly see; when the surrounding conditions get brighter, more light is needed. The Standards allow the least power in Lighting Zone 1, and increasingly more power in Lighting Zones 2, 3, and 4. It should be recognized that providing greater power than is needed can lead to debilitating glare, and to an increasing spiral of brightness as over-bright projects become the surrounding conditions for future projects. Overly bright conditions cause unnecessarily greater power use and energy waste.

The Energy Commission sets statewide lighting zones. However, local jurisdictions (usually a city or county) may change the zones to accommodate local conditions. When a local jurisdiction adopts changes to the lighting zone boundaries, it must follow a public process that allows for formal public notification, review and comment about the proposed change. The local jurisdiction also must provide the Energy Commission with detailed information about the new Lighting Zone boundaries, and submit a justification that the new lighting zones are consistent with the specifications in Section 10-114 of the Standards. The Energy Commission will maintain on its website a list of locally adopted adjustments to the lighting zones.



# Online Energy Training Videos

Over 100 videos on a variety of energy topics are available both at:

[www.energyvideos.com](http://www.energyvideos.com) or  
[www.ConsumerEnergyCenter.org/videos/](http://www.ConsumerEnergyCenter.org/videos/)

**BLUEPRINT**

**SEEKING EXCELLENCE**  
Brad Kemp, Ruben Barrera and Mark Berg talk about the Community Energy Efficiency Program. The second in a two-part series - page 4

**COMPLAINTS**  
and how the Commission pursues them

**Questions and Answers Residential**

**Q** Does fiberglass insulation have to be Kraft faced for Residential compliance?  
No. Unfaced insulation is completely satisfactory in most areas of the State, and usually will be easier to install to establish a friction-fit between framing members without gaps. If the insulation is Kraft faced the paper side must face the conditioned space to avoid moisture problems.

**A** I want to remodel the lighting in my kitchen, replacing the old built-in fluorescent "light box" lighting system with recessed can lights. Do the Standards have any requirements for this alteration?  
Yes. Section 152 (b) 1 of the Standards requires the newly installed kitchen lighting equipment to meet the applicable requirements of Section 150 (k), including an efficacy of not less than 40 lumens per watt. The lighting must provide a sufficient light level for basic kitchen tasks, and must provide a uniform pattern of illumination. Pin-based fluorescent lighting systems meet the lumens per watt requirements. Screw-based fixtures that accommodate incandescent bulbs, even if they are equipped with screw-in compact fluorescent lamps, do not qualify. Also, the general lighting must be switched on a separate switch from the non-high efficacy lighting. For additional recommendations on general lighting in a kitchen please refer to Blueprint # 62 at: [www.energy.ca.gov/efficiency/blueprint/pdf/2000\\_62\\_SFR\\_BLUEPRINT.PDF](http://www.energy.ca.gov/efficiency/blueprint/pdf/2000_62_SFR_BLUEPRINT.PDF)

**blueprint**

**QUESTIONS AND ANSWERS**

**CALIFORNIA ENERGY COMMISSION**  
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The Blueprint is published now only electronically and distributed by e-mail or on the web.

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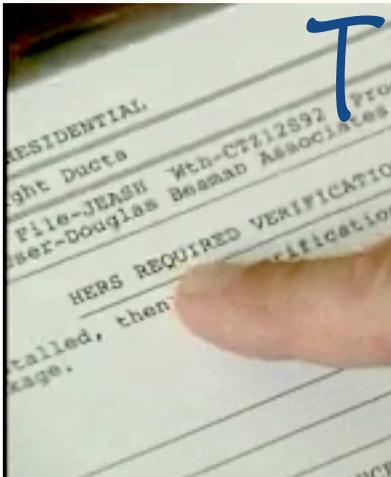
Did you know?

*“CF-4R  
– Don’t “final” the house  
until you have a  
completed copy of it!”*

Special  
information  
for  
**Building  
Officials**



And don’t forget - the HERS rater must be independent - not associated with the project builder’s company or the HVAC company!



The CF-4R is the form completed by a HERS Rater (third party special Inspector) – required whenever the builder chooses to use third party field verification to achieve compliance with the Energy Code.

The CF-4R is very important because big compliance credit is given for having systems third party verified and the CF-4R proves that verification was done.

**Protect the consumer!**

## *The CF-4R*

*All you need to do is:*  
Have your inspectors ask the builder for a final copy signed by an approved HERS rater.



For a training video on “Enforcement of HERS Ratings” go to:  
[http://www.consumerenergycenter.org/videos/residential/CHEERS\\_HERS/code](http://www.consumerenergycenter.org/videos/residential/CHEERS_HERS/code)

# BLUEPRINT

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# TRAINING:



## ▶ Title 24 Energy Efficiency Standards Training

Links for training on issues relating to California Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, Part 6) is available on the Energy Commission's web site at:

[www.energy.ca.gov/title24/training](http://www.energy.ca.gov/title24/training)

For training offered by the utility companies and other organizations please see the following websites for training opportunities.

**PG&E:** [www.pge.com/stockton](http://www.pge.com/stockton)

For information on training in Early Compliance Credits for Residential Lighting conducted by Doug Beaman:

[www.pge.com/003\\_save\\_energy/003c\\_edu\\_train/stockton/programs/res\\_lighting\\_credit.pdf](http://www.pge.com/003_save_energy/003c_edu_train/stockton/programs/res_lighting_credit.pdf)

**SoCal Gas & SDG&E:** [www.socalgas.com/business/resource\\_center/erc\\_seminar\\_info.shtml](http://www.socalgas.com/business/resource_center/erc_seminar_info.shtml)

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**SMUD:** [www.smud.org/education/index.html](http://www.smud.org/education/index.html)

**E&TC...SMUD Energy & Technology Center Lighting Programs:**

### Title 24 – 2005 Update on Lighting

Thursday, October 7 8:30 a.m. – 4:00 p.m.

(Pre-registration required) No charge

To register for either of these courses: [www.smud.org/etc](http://www.smud.org/etc)

## CALBO Training Institute

### EDUCATION WEEK

#### North

October 4 – 8, 2004

Concord Sheraton

*For additional information:*

#### South

November 1 – 5, 2004

Ontario Marriott

[www.calbo.org](http://www.calbo.org)

## Building Industry Institute (BII)

[www.consol.ws/content.asp?sid=46](http://www.consol.ws/content.asp?sid=46)

## CABEC: 2004 CEPE Training & Testing schedule is

now posted on the CABEC website at this link:

[www.cabec.org/cepetrainandtest.php](http://www.cabec.org/cepetrainandtest.php)

**You can now register for training  
and/or testing online at:**

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## Need Help?



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