

APP-TECH INC.

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IMPLEMENTATION OF THE CALIFORNIA ENERGY CODE

ENFORCING THE 2005 STANDARDS

Demonstrating Energy Code Compliance

WHAT THE LAW REQUIRES / WHY IT'S NOT HAPPENING

This document is APP-TECH Incorporated's attempt at identifying some of the more serious enforcement and implementation problems with the 2005 version of the California Building Energy Code. It also attempts to clarify the requirements and procedures needed to correctly demonstrate compliance with the Code. The scope of this report is limited to the administrative regulations contained in Title 24, Part 1.

TITLE 24, PART 1 - ENERGY BUILDING REGULATIONS

California Code of Regulations, Title 24, Part 1 contains the laws concerning the administrative requirements of the State's energy code. The following sections are the requirements pertaining to enforcement, with comments on underlined items.

SECTION 10-103 – PERMIT, CERTIFICATE, INFORMATIONAL, AND ENFORCEMENT REQUIREMENTS FOR DESIGNERS, INSTALLERS, BUILDERS, MANUFACTURERS, AND SUPPLIERS

(a) Documentation.

1. Certificate of compliance.

The Certificate(s) of Compliance described in Section 10-103 shall be signed by the person(s) responsible for the building design to certify conformance with Part 6. The signer(s) shall be eligible under Division 3 of the Business and Professions Code to sign such documents. If more than one person has responsibility for building design, each person may sign the document or documents applicable to that portion of the design for which the person is responsible. Alternatively, the person with chief responsibility for design may prepare and sign the document for the entire design.

Subject to the preceding paragraph, persons who prepare energy compliance documentation shall sign a statement that the documentation is accurate and complete

Clarify who can sign the Certificate of Compliance. Building Officials are capable of determining who may, or may not, be responsible for the building design. The Business & Professions (B&P) Code makes no reference to who is eligible to sign energy compliance documents. Anyone is **allowed** by the B&P Code to sign the Certificate of Compliance. Therefore, remove this meaningless reference to the B&P Code and let the building official do his or her job.

Some building designers do not directly specify any energy conservation features on their plans. Their plans reference the Certificate of Compliance for specification of features such as

insulation R-value or equipment efficiencies. Their signature on the certificate of Compliance merely signifies that the plans are consistent with the energy compliance features specified in the compliance documentation. If these features are only specified in the Title 24 documentation, this consistency is guaranteed.

There is no compliance **statement** for the documentation author to sign on any of the residential forms. There is a place on the CF-1R form for the documentation author to sign. However, this signature is meaningless since it does not indicate that the compliance documentation is accurate and complete.

2. Application for a building permit.

Each application for a building permit subject to Part 6, shall contain at least one copy of the documents listed in Sections 10-103 (a) 2 A, 10-103 (a) 2 B, and 10-103 (a) 2 C.

A. For all newly constructed buildings additions, alterations or repairs regulated by Part 6, the applicant shall file the appropriate Certificate(s) of Compliance on the plans. The certificate(s) shall indicate the features and performance specifications needed to comply with Part 6, and shall be approved by the local enforcement agency by stamp or authorized signature. The Certificate(s) of Compliance and supporting documentation shall be readily legible and of substantially similar format and informational order and content to the appropriate Certificate(s) of Compliance and supporting documentation in the appropriate Residential or Nonresidential Manual, as defined in Part 6.

B. Plans and specifications submitted with each application for a building permit shall show the characteristics of each feature, material, component, and manufactured device proposed to be installed in order to have the building meet the requirements of Part 6, and of any other feature, material, component, or manufactured device that Part 6 requires be indicated on the plans and specifications. Plans and specifications submitted with each application for a building permit for Nonresidential buildings, High-rise Residential buildings and Hotels and Motels shall provide acceptance requirements for code compliance of each feature, material, component or manufactured device when acceptance requirements are required under Part 6. Plans and specifications for Nonresidential buildings, High-rise Residential buildings and Hotels and Motels shall require that within 90 days after the Enforcement Agency issues a final occupancy permit, record drawings be provided to the building owner. If any characteristic is materially changed before final construction and installation, such that the building may no longer comply with Part 6, the building must be brought back into compliance, and so indicated on amended plans, specifications, and Certificate(s) of Compliance and shall be submitted to the enforcement agency. Such characteristics shall include the efficiency (or other characteristic regulated by Part 6) of each device.

C. All documentation necessary to demonstrate compliance for the building, and of the sections of Part 6 with which the building is intended to comply shall be submitted with each application for a building permit. The forms used to demonstrate compliance shall be readily legible and of substantially similar format and informational order and content to the appropriate forms in the Residential or Nonresidential Manual, as defined in Part 6.

There are 2 classes of features that are regulated by the energy code; those that affect either Prescriptive or Performance energy budget compliance, and those that do not, but are mandatory requirements on installed regulated devices. Features such as insulation R-value, window NFRC rating, and equipment efficiencies, affect energy budget compliance and therefore must be specified prior to issuance of a building permit. These are the features and devices that Part 6 requires to be indicated on the plans and specifications, so that the accuracy of the compliance documentation can be confirmed.

Features such as radiant floor slab edge insulation or whether residential light fixtures are incandescent or fluorescent, do not affect budget compliance and do not need to be verified prior to permit issuance. These mandatory measures are requirements on the installation of regulated devices not the design of the building. A designer **may** optionally specify some of these features. If so, those specifications would have to be consistent with the requirements of Part 6.

There are a few mandatory features that part 6 does specifically require to be included in the plans and specifications. An example of this class of features would be non-residential outside air ventilation requirements.

All of the above measures are also required to be specified and verified on the appropriate Installation Certificate(s) as defined below.

The nonresidential requirement that record drawings are to be provided to the building owner seems to be universally ignored. There is no way for the building official to confirm this but, one could require that a note stating this requirement be included on the cover page of the plans.

3. Installation certificate.

A. The person with overall responsibility for construction or the person or persons responsible for the installation of regulated manufactured devices shall post, or make available with the building permit(s) issued for the building, the Installation Certificate(s) for manufactured devices regulated by the Appliance Efficiency Regulations or Part 6. Such Installation Certificate(s) shall be made available to the enforcement agency for all appropriate inspections.

These certificates shall:

- i. Identify features required to verify compliance with the Appliance Efficiency Regulations and Part 6.*
- ii. Include a statement indicating that the installed devices conform to the Appliance Efficiency Regulations and Part 6 and the requirements for such devices given in the plans and specifications approved by the local enforcement agency.*
- iii. State the number of the building permit under which the construction or installation was performed.*

iv. Be signed by the individual eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or their authorized representative. If more than one person has responsibility for building construction, each person may prepare and sign the part of the document applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction may prepare and sign the document for the entire construction.

B. The enforcement agency may require the person with overall responsibility for the construction to provide any other reasonable information to determine that the building as constructed is consistent with approved plans and specifications and complies with Part 6.

C. If construction on any portion of the building subject to Part 6 will be impossible to inspect because of subsequent construction, the enforcement agency may require the Installation Certificate(s) to be posted upon completion of that portion.

4. Insulation certificate. After installing wall, ceiling, or floor insulation, the installer shall make available to the enforcement agency or post in a conspicuous location in the building a certificate signed by the installer stating that the installation is consistent with the plans and specifications described in Section 10-103 (a) 2 A and for which the building permit was issued and conforms with the requirements of Part 6. The certificate shall also state the manufacturer's name and material identification, the installed R-value, and (in applications of loose fill insulation) the minimum installed weight per square foot consistent with the manufacturer's labeled installed design density for the desired R-value.

The Installation Certificates (not some mandatory measures checklist) are required to be signed by the builder or installer, not the designer. It is unfortunately, impossible for an installer to comply with these requirements since the residential forms are incomplete (missing mandatory features etc.) and the non-residential forms do not exist!

(b) Certificate of Acceptance.

For all new Nonresidential buildings, High-rise Residential buildings and Hotels and Motels designated to allow use of an occupancy group or type regulated by Part 6, the applicant shall file Certificate(s) of Acceptance with the enforcement agency prior to receiving a final occupancy permit. The signer (s) shall be eligible under Division 3 of the Business and Professions code to sign such documents. The Certificate(s) shall be readily legible and of substantially similar format and informational order and content to the Certificate(s) of Acceptance in the Nonresidential Manual, as defined in Part 6. The Certificate(s) shall be approved by the local enforcement agency by stamp or authorized signature and shall indicate that:

1. The applicant has demonstrated acceptance requirements as indicated in the plans and specifications submitted under section 10-103 (a);

2. Installation certificates described in section 10-103 (a) 3 are posted, or made available with the building permit(s) issued for the building; and

3. That operating and maintenance information described in sections 10-103 (b) and 10-103 (c) were provided to the building owner.

The Business and Professions Code is completely silent with regards to who may or may not sign acceptance documents developed by the California Energy Commission. Since no one is prohibited from signing these documents, anyone is allowed to sign them. It is also not clear who selects the person who performs the acceptance tests. But since the Applicant (does this mean the **Permit** Applicant?) is the one required to file these forms, it would seem that this Applicant should either do the work or be the one who designates the acceptance person.

Note that the 3 requirements listed above that are required to be attested to on the Acceptance Forms and verified by the building official prior to issuance of the final occupancy permit, do not exist on the acceptance forms. The only places these statements can be found are in the LTG-1-C and MECH-1-C Certificates of Compliance! How can the designer, when applying for a building permit, know if the Installation Certificates are correct (one could however, state that the Certificates are not incorrect, since they do not exist) or if the builder will give the owner the correct information at building occupancy? Also, which acceptance person confirms that Installation Certificates, for items such as envelope mandatory features, are posted?

Finally, since the building official is forbidden from issuing a final occupancy permit until all installation certificates are posted and verified, and the CEC has not provided these forms, **all Non-Residential final occupancy permits issued so far, under the current Standards , are illegal.**

(c) Operating and Maintenance Information to be provided by Builder.

1. Operating information. The builder shall provide the building owner at occupancy the appropriate Certificate(s) of Compliance and a list of the features, materials, components, and mechanical devices installed in the building and instructions on how to operate them efficiently. The instructions shall be consistent with specifications set forth by the executive director.

For low-rise residential buildings, such information shall, at a minimum, include information indicated on forms Certificate of Compliance (CF-1R), Mandatory Measures (MF-1R), Installation Certificate (CF-6R), Insulation Certificate (IC-1), and a manual which provides all information specified in this Section 10-103 (b). The Home Energy Manual (P400-92-031, July 1992) may be used to meet the requirement for providing this manual.

For nonresidential buildings, high-rise residential buildings and hotels and motels, such information shall, at a minimum, include information required by the Certificates of Compliance, Certificate of Acceptance, forms ENV-1, MECH-1 and LTG-1, an Installation Certificate and an Insulation Certificate.

For dwelling units, buildings or tenant spaces which are not individually owned and operated, or are centrally operated, such information shall be provided to the person(s) responsible for operating the feature, material, component, or mechanical device installed in the building.

2. Maintenance information. The builder shall provide to the building owner at occupancy maintenance information for all features, materials, components, and manufactured devices that require routine maintenance for efficient operation. Required routine maintenance actions shall be clearly stated and incorporated on a readily accessible label. The label may be limited to identifying, by title and/or publication number, the operation and maintenance manual for that particular model and type of feature, material, component, or manufactured device.

For dwelling units, buildings or tenant spaces which are not individually owned and operated, or are centrally operated, such information shall be provided to the person(s) responsible for maintaining the feature, material, component, or mechanical device installed in the building.

3. Ventilation information. For nonresidential buildings, the builder shall provide the building owner at occupancy a description of the quantities of outdoor and recirculated air that the ventilation systems are designed to provide to each area. For buildings or tenant spaces which are not individually owned and operated, or are centrally operated, such information shall be provided to the person(s) responsible for operating and maintaining the feature, material, component, or mechanical device installed in the building.

(d) Equipment Information to be Provided by Manufacturer or Supplier. The manufacturer or supplier of any manufactured device shall, upon request, provide to building designers and installers information about the device. The information shall include the efficiency (and other characteristics regulated by Part 6).

This is the only place in the regulations where a Mandatory Measures MF-1 form is mentioned. It is a form that the Residential BUILDER gives to the HOMEOWNER at occupancy. It has absolutely nothing to do with plan check or construction. I believe the original intent was that the MF-1 would indicate to the homeowner which conservation features were incorporated in their home and the manual would describe the benefits and proper use of these features. In order to accomplish this, the MF-1 form needs to be re-written so that a typical homeowner will be able to understand it.

There is no requirement in the regulations for a Non-Residential Mandatory Measures form. It is not mentioned in the Law, or the Non-Residential Manual, or the Non-Residential ACM procedures.

(e) Enforcement Agency Requirements.

1. Permits. An enforcement agency shall not issue a building permit for any construction unless the enforcement agency determines in writing that the construction is designed to comply with the requirements of Part 6 that are in effect on the date the building permit was applied for.

If a building permit has been previously issued, there has been no construction under the permit, and the permit has expired, the enforcement agency shall not issue a new permit unless the enforcement agency determines in writing that the construction is designed to comply with the requirements of Part 6 in effect on the date the new permit is applied for.

"Determines in writing" includes, but is not limited to, approval of a building permit with a stamp normally used by the enforcement agency.

2. Inspection. The enforcement agency shall inspect new construction to determine whether it is consistent with the agency's approved plans and specifications, and complies with Part 6. Final occupancy permits shall not be issued until such consistency is verified. For Occupancy Group R-3, final inspection shall not be complete until such consistency is verified.

Such verification shall include determining that all installed manufactured devices, regulated by the Appliance Efficiency Regulations or Part 6, are indicated on the Installation Certificate and are consistent with approved plans. This certificate shall include information specified in Section 10-103 (a) (3) (A).

For buildings that have used a compliance option that requires field verification and diagnostic testing, the building department shall not approve the building until the building department has received a Certificate of Field Verification and Diagnostic Testing that has been signed and dated by the HERS Rater.

The building official's responsibilities regarding approval of Certificates of Acceptance should be included in this section.

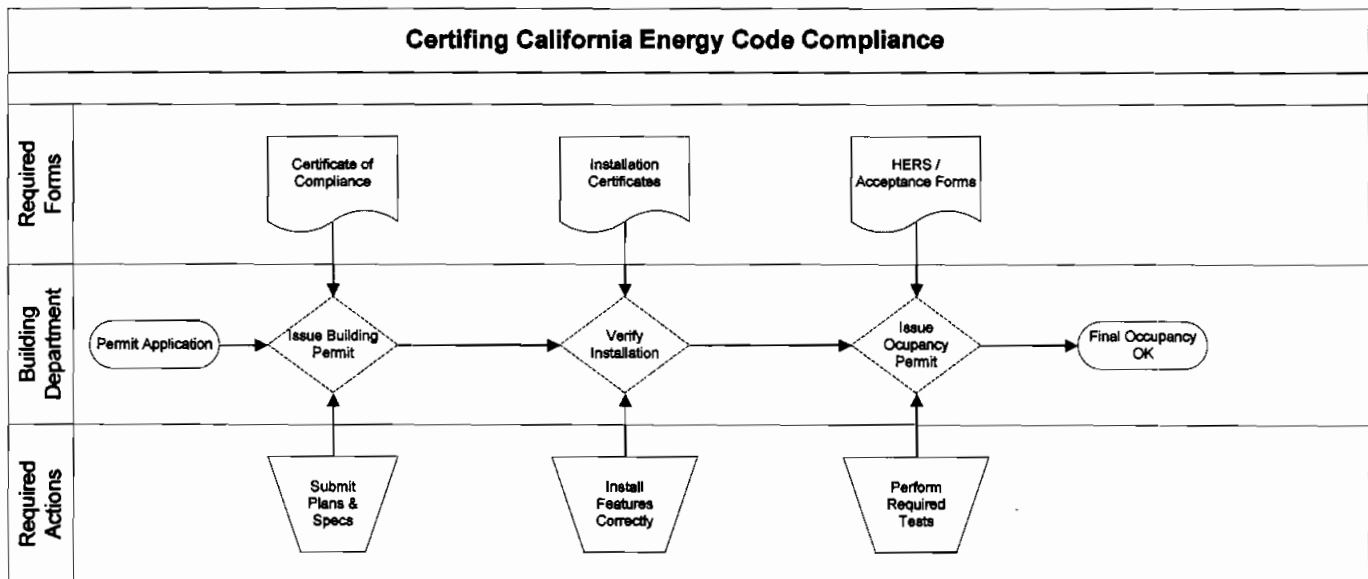
The enforcement agency is required to verify that all manufactured devices are indicated on the Installation Certificates during field inspections, not a Mandatory Measures list in the permit application. Note that it is not possible for them to do this since there are no Non-Residential Installation Certificates, and the Residential forms are incomplete (no indoor & outdoor lighting Installation Certificate, for instance).

Building Officials are quite correctly concerned with liability issues related to the performance of their duties. Having the CEC mandate actions that are impossible to comply with is not the way to promote broad acceptance and enforcement of the State's Building Energy Code.

IMPLEMENTATION

Analysis of the above administrative requirements has led to the following description of the State's intended energy code verification process. This process has three primary parts:

- 1) *A building permit is applied for* . The applicant provides either prescriptive or performance Certificates of Compliance and supporting plans and specifications. The building official verifies that the compliance documentation is correct and that the plans and specifications are consistent with the features required in the Certificate of Compliance. The building official then issues a building permit.
- 2) *The building is constructed* . The builder incorporates the features and devices required by the Certificates of Compliance and the relevant Mandatory Measures in the construction. The primary method of verifying compliance at this stage is the completion of Installation Certificates by the appropriate installers. The building official then verifies the correctness of these certificates and may ask for additional information to ascertain that the building is being accurately constructed.
- 3) *Third party testing is done and documented* . Required HERS and Acceptance tests and verifications are performed by the appropriate individuals and the required documentation is provided to the building official. The building official then verifies the correctness of these documents and then issues the final occupancy permit.



There is actually a fourth and final verification step implied in the administrative regulations. The building owner, at occupancy, is supposed to be given, by the builder,

sufficient information for the owner to confirm that the building, as constructed, complies with the requirements of California's Building Energy Code.

COMPLIANCE FORMS

Compliance Forms are the instruments used by building officials to facilitate their enforcement of the Energy Code. There are two classes of Compliance Forms:

- 1) Forms mandated by the Prescriptive or Performance method that was chosen for the proposed building.
- 2) Supplemental forms from the appropriate CEC Residential or Non-residential manuals. Some of these forms are meant to assist designers and builders in meeting the Standards. Others are intended to aid building officials in enforcement of the Standards.

The following list describes some of the problems found with the design and implementation of these forms. One of the causes of these problems is the fact that these forms were developed after the public review of the items they were meant to address was completed. Enforcement forms and procedures, required computer algorithms, and design aids should all be developed in conjunction with each proposed regulatory change. This would allow those most familiar with the issue being addressed to define the methods and procedures required for compliance.

RESIDENTIAL FORMS

CF-1R

The residential forms make no reference to the Business & Professions Code for limitations on who may sign the compliance forms. The non-residential forms should follow this example. Also, the documentation author signature block does not indicate that the documentation is accurate and complete. Therefore, this signature is meaningless.

MF-1R

The design of this form is completely erroneous. As stated earlier, the MF-1R form is required to be given by the Builder to the Homeowner. Neither the Designer nor the Building official has anything to do with it. The instruction given on the form stating that this form must be included with the permit application is wrong. Most of the Mandatory Measures specified in Title 24, Part 6, are requirements on the installer and are the minimum specifications for these features and devices regardless of whether they are mentioned in the plans or specifications, or not.

CF-6R

All mandatory measures are required to be listed on the appropriate Installation Certificates. These Certificates are then to be made available to the Building Official at the

time of inspection of these various features. An examination of the residential Installation Certificates will show that many mandatory features and devices are not included in these forms as mandated by Law. Amazingly, given the extent of the changes incorporated in the 2006 Standards, there is no residential lighting CF-6R! There is also, no solar water heating CF-6R. Correctly formatting and verifying this form would be a great start towards attaining some real energy savings from the Energy Code.

Many residential, and some over the counter non-residential, permit applications do not include plumbing or mechanical plans. The only opportunity for a building official to verify Energy Code compliance for these systems is during field inspection. Properly formatted CF-6 forms would facilitate this verification.

WS-3R, WS-4R & WS-5R

APP-TECH does not use Prescriptive compliance methods, therefore, only form WS-5R will be addressed. This worksheet should be incorporated in the (hopefully, soon to be developed) Lighting CF-6R form and filled out by the installer.

CF-SR

I have seen several plan sets where the Title 24 Performance documentation takes credit for large solar system net solar fractions without providing any supporting documentation, CF-SR or F-Chart. The plans and specifications contained absolutely no information on these solar water heating systems. I decided to check out a couple of these building sites to ascertain if any solar system was ever installed. The good news; they had installed solar water heaters. The bad news; they were cheap Chinese junk that had no SRCC Certification. In order to receive **any** compliance credit a solar system **must** be certified by the SRCC. These buildings should not have received any solar credit, and would not have met the required Energy Budget.

This is an example of abuse that would have probably been thwarted if the installer was required to post a Solar Water Heating Installation Certificate.. Actually, the installer **is** required to post an Installation Certificate. The CEC has just never gotten around to developing one.

CF-4R

This form deals with HERS Rater field verification and diagnostic testing. Our climate zone does not require HERS testing, so I am not very familiar with these tests. It appears that by Law, these forms are only required if one were using a Prescriptive Method of compliance. HERS testing is never required, in the Standards, if a Performance method is used to demonstrate compliance with the Energy Code, even when credit is taken for any of these higher performance features.

NON-RESIDENTIAL FORMS

PERF-1

While the number of Residential forms has decreased, (no C2-R) the number and complexity of the Non-residential forms has exploded. Since many Non-residential compliance applications utilize the Performance Method, there is a simple modification that would more than half the number of pages required to be included in the plan set. Require the program to strip out all meaningless information prior to printing out the compliance documents. Currently an entire page is printed out even when only one line contains any compliance data.

The program does not fill in forms correctly and does not save required compliance parameters with the input file. Page 2 includes prescriptive compliance results. These should be eliminated. Some plan checkers get confused when this form indicates that the building fails Prescriptive but not Performance requirements.

ENV-1-C, MECH-1-C & LTG-1-C

Check boxes and statements on forms MECH-1-C and LTG-1-C referring to section 10-103 must be removed and placed on the Acceptance Forms, where they belong. There is no way that one can know these things at the time of permit application.

CF-?-NR?

Where are the Installation Certificates? There are absolutely no non-residential Installation Certificates! Both the Building Official and the Acceptance Tester are required by Law to verify their correctness prior to an occupancy permit issuance. Every non-residential occupancy permit issued by a building department, under the current Standards, is therefore illegal!

OLTG-1-C

By definition, an outdoor lighting system complies with the Standards if the total wattage of all outdoor lighting fixtures installed is equal to, or less than, the total wattage allowed by the Outdoor Lighting Method. There are **12 pages** of compliance forms that nowhere state whether, or not, the proposed outdoor lighting system actually complies with the Standards.

What basis are plan checkers using to approve or disapprove outdoor lighting systems? What were building officials told about filling out these forms in the training sessions held throughout the State?

LTG-?-A and MECH-?-A

I have gone over the acceptance forms and procedures in the manuals many times and I still have no idea what is required and who does the work. As far as I know, no building department in our area requires completed Acceptance Forms and most contractors here have

never heard of them. The administrative Regulations indicate that the Applicant is the one who submits the forms and is responsible for doing the work.

All the forms have problems, and most are quite confusing. However, I'll only comment on one Acceptance Form, MECH-5-A.

MECH-5-A is the Air Distribution Acceptance Document. It again includes a mindless compliance statement referring to the Business and Professions Code. There is nothing in the B&P code that defines who can fill out the CEC's acceptance forms. If the Commission intended to limit persons doing this work to licensed contractors and engineers, then they must have specifically stated this restriction in their law.

Part 2 of this form refers to work done by the installer. This information, if truly the responsibility of the installer, should be included in an Installation Certificate, not an acceptance form.

Part 3 switches to requiring that a HERS rater fill out this page. Neither the Administrative Code nor the Standards seem to require a HERS Rater to complete Acceptance Forms. What qualifies a **Home** Energy Rater to inspect commercial buildings anyway? It is not clear to me, why the Commission would attempt to require HERS Raters for residential verification, but allow anyone to do most of the non-residential verification.

Finally, the form lists Section 144(k) of the Standards as the basis for these acceptance requirements. Section 144(k) is a Prescriptive Standard only. Buildings that comply using a Performance Method do not appear, therefore, to require a MECH-5A form. This, of course, makes no sense.

LTG-8-C

Delete the Common Lighting Systems Method. It unnecessarily complicates the Area Category Method and puts the CEC in the position of decreeing what the "correct" illumination for a space is.

SO, WHAT'S THE PROBLEM?

Most of the forms are inaccurate and/or confusing. Some forms that are critical to determining if a building meets the Standards do not even exist. Many building departments do little more than check that form signature blocks are filled out. Some building departments do not require submission of **any** energy compliance documentation with a building permit application! Many of the procedures meant to improve compliance such as verification of Installation Certificates and Non-residential Acceptance testing are predominantly ignored by much of the State's building departments.

What about the contractors that wrote the compliance manuals or trained the State's building officials? How could they have done their work diligently without finding many of the problems outlined above? How could the trainers discuss the mandate for building officials to verify non-residential installation certificates prior to issuing occupancy permits and their

liability for failure to comply with this law, without realizing that the forms did not exist? Or, perhaps these problems were reported, but for some reason the CEC staff decided to ignore them.

The previous part of this report dealt primarily with administrative requirements for building officials. The next part deals with administrative requirements for the CEC.

The following section of the Administrative Code is primarily a restatement of some of the requirements in Sections 25402 and 25402.1 of the Warren-Alquist Act.

SECTION 10 -109
CALCULATION METHODS & ALTERNATIVE COMPONENT PACKAGES

(a) Public Domain Computer Programs. In addition to the present approved public domain computer programs, the commission may, upon written application or its own motion, approve additional public domain computer programs that may be used to demonstrate that proposed building designs meet energy budgets.

1. The commission shall ensure that users' manuals or guides for each approved program are available.

2. The commission shall approve a program only if, when it models building designs or features, it predicts energy consumption substantially equivalent to that predicted by the public domain computer program.

(b) Alternative Calculation Methods (All Occupancies). In addition to public domain computer programs, the commission may approve alternative calculation methods (ACMs) that applicants for building permits may then use to demonstrate compliance with the performance standards (energy budgets) in Part 6.

1. General requirements. To obtain approval for an ACM, the proponent shall submit an application that demonstrates that the ACM:

A. Makes no changes in any input parameter values specified by the commission in Item 2 below;

B. Provides input and output documentation that facilitates the enforcement agency's review and meets the formatting and content criteria found in the Residential or Nonresidential ACM Manual;

C. Is supported by clear and concise instructions for using the method to demonstrate that the energy budget requirements of Part 6 are met; and

D. Is reliable and accurate relative to the appropriate public domain computer program

2. Procedural requirements for alternative calculation methods. In order to obtain approval of an ACM, the applicant must comply with the requirements, specifications, and criteria set forth in the Residential or Nonresidential ACM Manual. The ACM Manuals specify application requirements, minimum modeling capabilities, required output forms and instructions, input assumptions, testing requirements, test approval criteria, vendor requirements, and other related requirements. The requirements, specifications, and criteria in the 2005 Residential or Nonresidential ACM Manuals are hereby incorporated by reference.

What “present approved public domain computer programs” are they talking about?

There is a major problem with the way the CEC attempts to comply with the administrative requirements for the Performance Method of compliance. The Commission is required to provide computer programs to demonstrate compliance for the mandated performance standards. These program’s results are also supposed to be the benchmark to which all proposed Alternative Calculation Method (ACM) programs are compared.

The CEC’s non-residential compliance program was not made available to the public until approximately 6 months after the 2005 Standards became effective! The same vendor that was under a **sole source contract** with the CEC to provide this program however **was** able to get their **proprietary** performance program “EnergyPro” certified and available for purchase before the Standards went into effect! Did this company use inside information learned while developing the State’s program to accelerate the development of their proprietary program? Was there some “quid pro quo” agreement regarding the 6 month delay in availability of the CEC’s program? Was this contractor a “consultant” subject to the State’s conflict-of-interest disqualification and disclosure requirements?

The CEC’s non-residential compliance program “PERFORM 2005” was approved by the CEC in September of 2005 (but not made available to the general public until April 12th 2006) as an ACM, not as a Public Domain Computer Program. The CEC apparently approved EnergyPro at a time when there was no State non-residential computer program available! How could they do this without first determining that EnergyPro was reliable and accurate relative to the State’s reference computer program, as required by Section 10-109 (b) D.?

James J. Hirsch and Associates (JJH), 12185 Presilla Road, Camarillo, CA 93012-9243 has been trying to get a version of their “eQUEST” program certified by the CEC for non-residential compliance for quite a while, without success. This is difficult to comprehend since “EnergyPro” uses computational software licensed from JJH. “eQUEST” is supported by California utilities under the auspices of the California Public Utilities Commission and is **FREEWARE** available for no cost. “EnergyPro” costs between \$800.00 and 1,200.00! As a California ratepayer, I have already paid for “eQUEST”, why was I forced to spend an additional \$1,200.00 to purchase “EnergyPro”?

The Warren-Alquist Act and Title 24, Part1 also mandate development of a residential program. Well, it’s almost a year and a half after the 2005 Standards went into effect, and there

is still **NO** residential compliance program available from the CEC, either Public Domain or ACM! What is going on? Has Al-Qa'ida infiltrated the CEC?

These programs are now also used to demonstrate building energy performance for purposes other than compliance with the Energy Code. The PUC and the State utilities use them to verify energy savings for rebate programs. They are also relied on in green certification programs such as LEED. I have modeled many buildings for non-residential performance budget compliance during the past year and a half. I am convinced that the "EnergyPro" program should not have been certified by the CEC. For instance, there are several ways to vary the results reported by the program in ways that can not be detected by examining the compliance documentation supplied to the building department. If someone were trying to qualify for a utility rebate would he decide that the highest or the lowest compliance margin obtained was the "correct" value? The Warren-Alquist Act requires public review of proposed ACM programs prior to CEC certification. I do not recall that the public ever had a formal opportunity, in connection with the adoption proceedings, to verify the correct operation of "EnergyPro" before it was certified. If energy consultants familiar with the Performance Standards had a chance to verify correct operation of this program prior to certification, and influence the certification process, I am sure that many areas of concern would have been identified, and hopefully corrected.

How can one have any faith in the results reported by the so called "CEC Certified" compliance programs? How can the CEC require building officials to strictly adhere to the administrative requirements of Title 24, Part 1, when the CEC blatantly ignores their own administrative duties?

A close examination of the practices and technical problems associated with the approval of both public domain and ACM programs may lead to many more questions and hopefully, some answers. I believe the appropriate agency to perform this examination would be California's Bureau of State Audits.

FORMAL REQUEST

This report dealt only with the Administration of the Energy Code and focuses mainly on enforcement issues. This was done to keep the scope manageable and because I believe enforcement must be the basis for the development of the Energy Code. There is no point expending a lot of effort in adopting new regulations, if Building Officials can not, or will not, enforce them.

This does not mean that there are not also problems in many other areas related to the 2005 Standards, such as the Part 6 Regulations themselves, the Residential and Non-residential Manuals, the ACM Manuals and the Joint Appendix. If I tried to address all of these problems, I'd never finish this paper. So I'll stop here with a few final items and a request for the Commission.

- 1) Conflict of interest requirements should be adhered to by all contractors involved in all aspects of the development of the Energy Code and any

supporting programs, manuals or analysis. Any features of the 2005 Standards promoted by contractors found to have a conflict should be suspended until the benefits attributed to these features can be independently verified.

- 2) Amend the Warren-Alquist Act to remove all references to the phrase "Public Domain". Public domain computer programs can be freely altered by anyone. This could lead to hundreds of versions of the State compliance program, each giving different results for the same building.

APP-TECH INC. HEREBY REQUESTS THAT THE CALIFORNIA ENERGY COMMISSION STOP ALL WORK ON THE 2008 REVISIONS TO THE STANDARDS UNTIL THE CEC, OR SOME OTHER STATE AGENCY, CORRECTS THE MANY SERIOUS PROBLEMS WITH THE 2005 CALIFORNIA ENERGY STANDARDS .

For questions or comments, please contact the author of this paper:

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