

Docket number 12-BSTD-01**Comments to the California Energy Commission by Mike Gabel
on the 2013 Residential and Nonresidential ACM Manuals**

Please review the following comments as they pertain to the 2013 Residential and Nonresidential ACM Approval and Technical Manuals. Given the major changeover from one ACM Manual to a *2013 ACM Approval Manual* and a *2013 ACM Technical Manual*, and given the new role of the *Compliance Manager* in all approved compliance software, I'm making these remarks without knowing exactly how and where they need to be incorporated. I'm requesting that Staff review and implement these recommendations in the most effective fashion within all relevant 2013 Standards documents and software.

To the extent that these comments affect the 2013 ACM Approval Manuals, please specify whatever is needed in those documents to allow for the following suggestions.

1. Printout of Standard Design Energy Measures

Every compliance software program must be required to:

- (a) Show an on-screen listing of all energy measures that define the Standard Design; and,
- (b) Print out a new [optional] compliance form (e.g., SD-1) that lists all Standard Design energy measures

It's crucial that anyone who reviews compliance forms for a specific Proposed Design can see, in a fair amount of detail, how the baseline Standard Design is set for that particular project. It would also substantially help in debugging the development of the Standard Design energy budget in the Compliance Manager. Currently, this capability is lacking under the 2008 Standards.

2. Input of Relevant Notes into Compliance Software

There are many fields, especially in the Nonresidential compliance forms, which are printed as blank because the compliance software will not allow for inputs to those to be printed within the program. Compliance software should be required to allow certain Notes and/or text to appear on the forms for certain defined fields that don't affect the energy use of the building.

As a corollary, compliance forms to be sent to a Registry database should allow editing in those areas of the forms which allow for Remarks or Notes but do not change the list of necessary energy measures or the energy use metrics.

3. Existing Shading of Replacement Fenestration

An unfortunate -- and unfair -- aspect to current performance modeling rules is that new fenestration in a proposed building is compared to Standard Design fenestration with no exterior shading; but replacement windows in a proposed building are compared to Standard Design windows that already include all existing fixed exterior shading modeled (i.e., overhangs and side-fins). The 2013 standards should get rid of this anomaly. Any exterior shading – new, existing or altered – should always be treated the same way in the Standard Design with respect to any glazing connected to it. It makes no sense to credit exterior shades only for new fenestration, and then not give shading proper credit in keeping out solar gain for replacement windows. This should be true whether considering Residential or Nonresidential buildings.

4. All Inputs that Affect TDV Energy on the Certificate of Compliance

There are a number of inputs into 2008 compliance software that affect the TDV energy of the Proposed and/or Standard building; but show up nowhere in the Certificate of Compliance. The 2013 Standards should require that any energy measure inputs that affect TDV energy use must appear within the Certificate of Compliance.

5. Consistent and Correct Default Values in Standard Design Mechanical Systems

I'm not sure whether it is the logic defined (or left undefined) within the 2008 ACM Manuals, or whether some of these are Energy Pro and/or Micropas problems. However, Standard Design TDV energy use -- apparently related to the default assumptions regarding the Standard Design HVAC systems – sometimes depends on how the Proposed building HVAC system is defined or left undefined. If, for example, the compliance software user specifies that a nonresidential HVAC system is Existing and not part of the compliance calculations, then the software should always model the Standard Design HVAC system the same way – regardless of whether one puts in an actual (Existing) system or leaves the Existing system “undefined”. The ACM Manuals should be clear enough that these sorts of problems don't arise under the 2013 Standards.

6. 2013 Nonresidential Daylit Zones Noted on Compliance Forms

Even though automatic lighting controls are mandatory for nonresidential primary side-lit daylight zones, not including these daylight zones and the fixtures in them will affect the performance analysis. Nonresidential compliance software should be required to test if there is a daylight zone based on the 2013 definition (fenestration \geq 24 sf with requisite VT), and print out something on the Certificate of Compliance making a point that “no daylight zone has been input”, and/or that “no lighting fixtures have been assigned to the daylight zone”, etc.

7. Fully Defining Existing vs. Altered Conditions in Residential Compliance Software

Under the Residential Standards: being able to fully define Existing vs. Altered vs. New conditions for all building and system inputs is very important to assign proper credits and penalties to pre- and post-alteration conditions. Current versions of Energy Pro and Micropas don't always allow one to fully define and compare Existing conditions to Altered conditions when certain HVAC system types change. ACMs should always allow for a full and detailed description of HVAC and water heating systems before and after a remodel, and be able to fully model before and after conditions accurately.
