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September 3, 2020

California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

RE: 2022 Energy Code Pre-Rulemaking - TN # 234025

Dear sirs:

I support the subject-referenced proposal requiring ATT review of plans prior to AHJ plan review.

As a design engineer in engineering firms for over twenty years, and now as part of an electrical contracting business for the last five years, I can share the following summary of experience with this issue:

1. Energy Code/design training for engineers and contractors is not required in California, so it is up to these firms and companies to find suitable training, and/or read and understand the several hundred pages of Code and manuals, and to keep up with the changes every three years. California's professional engineering licensure does not require continuing education, as some states do; this might be an avenue to encourage/require the continuing education process to this end. As an engineer I can confidently state that "P.E." following a person's name does not guarantee competence (though there are many great lighting designers are P.E.'s); training, experience and continued education are key.

2. Many engineers and contractors rely on designs provided by lighting and controls manufacturers, or their representing companies, and also rely on outside energy consultants to prepare the NRCC's. Generally speaking in my experience, these outside parties have good working knowledge of the Energy Code requirements, but the engineer/contractor may not review all aspects of the design and Code compliance that is indicated on the plans.

3. Many AHJ's in my experience, especially outside the large City areas, do not seriously review lighting and controls compliance and rely on the engineers', lighting designers' or contractors' designs as presented.

4. The contractor (and their subcontractors) essentially has the responsibility to make the lighting controls systems work and to be compliant, per typical project specifications and Installation Certificate requirements. Before 2014, this was less of an issue; the lighting control systems which were essentially enacted by the 2013 Energy Code and beyond are very complex and are pretty difficult for the average contractor/installer to understand and to execute successfully. If the original design is not compliant, there are significant potential installation and wiring issues that will occur in the field. For example, a lighting control design from an engineer showed locations of corner-mount sensors (with 90-degree PIR coverage) at the middle of a side wall in every classroom in the project. This design error made it through plan review, through the shop drawing submittal prepared by the sensor manufacturer, through the shop drawings submittal process back to the engineer, to being installed in those locations in the field. What turned out to be an expensive field correction could have easily been corrected with a review by an ATT during the design.

5. There are typical design issues that we see on some engineered and approved drawings (and I have been guilty of, as well), including: no controls sequence of operations provided (i.e., Partial-On operation for offices, etc.), occupancy sensors shown less than four feet from diffusers, area controls lacking separation of lighting types (general/task, primary and secondary daylit zones), and wiring/circuiting designs not matching the controls intent or requirements. Sometimes there is not enough or conflicting information shown to discern what is actually the design intent.

6. I have only been an ATT for about a year and credit the ATT training for significantly improving my lighting/controls designs and review of designs by others. I have recommended this ATT training to other engineers just to better understand how what is being designed on paper needs to function in the field, even if they never perform an ATT test.

I don't want to provide an only-negative summary of my experiences; I have seen some improvement in all aspects of the lighting/controls design, review and installation process, but know that further work is needed…

If the goal is to provide successful lighting and controls projects that save energy and meet the intent and requirements of the Energy Code, then I would suggest that we:

a. Don't assume that all of the designs (engineer, contractor, etc.) are problem-free.
b. Don't assume that the AHJ plan review will find the design problems.

I would suggest there is an practical method to see if such reviews are warranted. How about reviewing as random of a sample as possible of typical approved plans, and/or projects in or at the end of construction? … if this hasn't already been done?

Although outside of the scope of this Pre-Rulemaking TN, I believe we would find that ATT review of plans prior to construction will also provide good design and potential cost-saving feedback, for example, noting where daylighting is shown as part of the design but is not required, as we often see.

For these reasons, I support the proposal to require ATT review of plans prior to AHJ plan review.

Note that it should be considered if and how ATT review is accomplished and confirmed where changes in the design occur as a result of plan review comments, or during bidding or construction.

Thank you for the opportunity to provide feedback, and let me know if you have any questions –

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