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VIA EMAIL & HAND DELIVERY

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 10-BSTD-01
1516 Ninth Street
Sacramento, CA 95814
PublicAdvisor@energy.ca.gov

Re: Comments on Proposal for Certification of Acceptance Testing Field Technicians for Lighting Controls (Docket No. 10-BSTD-01)

Dear Commissioners and CEC Staff:

The following comments are submitted on behalf of the California State Labor Management Cooperation Committee and Bernie Kotlier, co-chair of the California Advanced Lighting Controls Training Program ("CALCTP"), in support of the proposed amendments to California Code of Regulations Title 24 regarding certification of acceptance testing field technicians for lighting controls and mechanical systems. CALCTP is a four year old award winning, industry-wide public/private non-profit training and certification collaborative that offers advanced training and certification in the design, installation, testing, commissioning and maintenance of advanced lighting systems.

Title 24 requires acceptance testing and documentation of advanced lighting controls and HVAC systems in order to ensure that systems have been installed and adjusted correctly. Title 24, however, does not require acceptance testers to have any qualifications, expertise or demonstrated competence in performing these tests and verifying that the systems have been installed and perform as designed. Moreover, California Commissioning Collaborative research on acceptance testing enforcement and effectiveness found that code officials, contractors and engineers are not clear on the acceptance testing procedures and form documentation. As a

result, it appears that incomplete or incorrectly executed acceptance tests and forms are currently the norm rather than the exception. This finding is consistent with the Commission's repeated findings that appropriate training and certification is needed for both lighting and HVAC systems in order for California to realize its energy efficiency goals.

The proposed regulations address this issue by requiring testing, adjusting and documentation of lighting controls to be performed by a California certified general electrician who is certified by the CALCTP, and who is employed by a California licensed C-10 electrical contractor that holds a CALCTP contractor certification. These acceptance tests require skills that are not commonly found in the industry, but which are mastered in the 60 hours of CALCTP training and certification. To be eligible to enter CALCTP, candidates must be state certified general electricians. CALCTP consists of a very rigorous curriculum designed by California utilities, the California Lighting Technology Center at U.C. Davis, and electrical industry master instructors. The training includes 40 hours of hands-on labs which require a 100% pass rate for graduation, in addition to lectures that are followed by a comprehensive and demanding final exam.

The proposed regulations would also require testing, verification or documentation of mechanical systems to be performed by a technician certified by (1) the Testing Adjusting and Balancing Bureau (TABB); (2) the National Environmental Balancing Bureau (NEBB); or (3) the Associated Air Balance Council (AABC). These comments, however, focus on the proposal to require CALCTP certification for acceptance testing of lighting systems.

In its notice for the February 27, 2012 Lead Commissioner Workshop on this proposal (February 27th Workshop"), the California Energy Commission ("Commission") listed 18 questions on which it sought public input. This letter provides responses to those questions relating to CALCTP certification. This letter also provides responses to two additional questions that were raised repeatedly at the February 27th Workshop.

I. GENERAL BACKGROUND OF CALCTP PROGRAM

The California Advanced Lighting Controls Training Program (CALCTP) was established in 2008 in cooperation with the California Energy Commission (CEC), the University of California Davis-California Lighting Technology Center, the

California Community College Chancellor's Office—Advanced Transportation Technology Energy (ATTE) Campuses, California Investor-Owned Utilities (which include Southern California Edison, Pacific Gas & Electric and San Diego Gas & Electric), Municipal Owned Utilities (which include Sacramento Municipal Utility District), the National Lighting Manufacturers Association, ICF International and the International Brotherhood of Electrical Workers and the National Electrical Contractors Association (CA LMCC/IBEW-NECA). The purpose of CALCTP is to increase the number of California state-certified General Electricians with the knowledge, skills and abilities necessary to install, program, test, commission and maintain advanced lighting control systems in commercial facilities. There are 28 CALCTP training facilities across the state at 21 Joint Apprenticeship and Training Centers (JATC), 6 California Advanced Transportation Technology & Energy community college campuses, and 1 Utility Energy Training Center.

The demand for Advanced Lighting Control-certified General Electricians in California is driven by a unique mix of energy and environmental policy issues. In 2005, California consumed over 252 billion kilowatt hours of electricity, making it the second largest electrical power consumer in the nation with 6.9% of the national load. Commercial buildings are the largest consumers of electrical power, accounting for more than 40% of electrical consumption in the state. Interior and exterior lighting accounts for 35-40% of commercial building electrical load, more than twice the energy used for cooling.

In the face of growing concerns about global climate change, the State of California passed the California Global Warming Solutions Act in 2006 prompting a series of policy actions by the CEC and California Public Utility Commission (CPUC) mandating stronger energy efficiency standards across all segments of California's economy and increased investment by both the investor-owned utilities and municipal-owned utilities (IOMUs) in programs to encourage and support energy efficiency programs. Given the large share of California energy usage devoted to commercial lighting, the implementation of advanced lighting controls provides one of the biggest opportunities to reduce electricity use and limit production of greenhouse gases related to global climate change. However, these reductions are only possible if advanced lighting controls are installed correctly so they can achieve their specified optimum energy saving potential.

The relative shortage of California general electricians with the skills and certifications needed to support commercial entities in adopting energy-saving advanced lighting controls has resulted in installation and acceptance testing of

advanced lighting controls by persons without the appropriate level of knowledge, training and experience necessary to ensure the projected energy-saving performance of these systems. The CALCTP program was expressly designed to address and correct this issue.

II. ANSWERS TO COMMISSION WORKSHOP NOTICE QUESTIONS REGARDING CALCTP CERTIFICATION FOR ACCEPTANCE TESTING

Q1. Is it appropriate for the Standards to limit who can serve as an acceptance testing Field Technician to only persons who meet specific training and certification requirements?

Yes, using Field Technicians that have met specific experience, training and certification requirements to perform acceptance testing will significantly reduce the incidence of advanced lighting control products being poorly installed and operating below their specified efficiency. Advanced lighting systems are complex systems that require a unique mix of experience, training and competence to ensure proper performance. Improper installation and inadequate acceptance testing results in sub-standard performance, and/or a high rate of call-backs and/or disabling/removal of advanced lighting control systems by frustrated consumers, which has been identified by the IOMUs as a principal barrier to wider adoption of the technology.

At the February 27th CEC workshop, even opponents of the certification proposal admitted that only a few qualified persons were currently performing the acceptance tests correctly and that this was the exception, not the rule. As testified by Mark Hydeman of Taylor Engineering, acceptance testers need to be able to modify control systems and "very few people are competent" to do this now. The goal of the proposal is to ensure that all persons who perform these acceptance tests have the training, experience, expertise and competence to perform these tests, not just a few exceptional outliers. Performance of advanced lighting system acceptance testing by persons who do not have the requisite training, experience, expertise, competence, oversight and accountability is counter to the Commission's goal to achieve maximum energy efficiency and can lead to results that fall short of design and specification standards.

Currently, CALCTP is the only available certification that ensures that acceptance testers have the experience, knowledge, and competence to properly perform such testing. Acceptance testers without these qualifications generally are unlikely to perform these tests correctly or completely. In our experience, general certified electricians who take the CALCTP classes regularly acknowledge that they were inadvertently not installing and testing these systems properly prior to receiving the CALCTP training and certification. Without meaningful certification requirements, there will be no quality control over acceptance tests and the vast majority of acceptance testing will be performed by persons without sufficient experience, knowledge, training or competence to correctly perform these tests. Accordingly, acceptance testing field technicians without sufficient baseline experience, training and certified expertise should no longer be allowed to perform these tests.

Q2. Would persons who currently are allowed to serve as acceptance testing Field Technicians be disadvantaged by training and certification requirements? How should training and certification requirements be designed to provide a reasonable path for these persons to become qualified?

Currently no certification, training, experience, expertise or demonstration of competence is required for the performance of the CEC acceptance tests. This proposal would necessarily limit who can perform such tests by instituting certification requirements to ensure that *all* acceptance testers of advanced lighting systems possess sufficient training, experience, expertise, competence, oversight and accountability to ensure proper performance of advanced lighting systems. The proposal would thus eliminate current *acceptance testing field technicians* who are not demonstrably qualified. Any training and certification requirements disadvantage persons who do not meet the requirements, but such requirements are necessary if the goal is to assure high quality acceptance testing. That goal cannot be achieved by allowing persons who do not meet such requirements to perform acceptance testing.

CALCTP provides a reasonable path for qualified acceptance testing field technicians to be certified. Any current acceptance testing field technician who is already a certified general electrician may take the CALCTP class. CALCTP integrates scheduling flexibility for the 50-hour training by sequencing skill building and laboratory instruction in modules that accommodate day, evening and/or weekend facility availability. This scheduling flexibility permits CALCTP to

serve unemployed, underemployed and incumbent general electricians during day, evening-only, or evening & weekend formats at 28 CALCTP training facilities across California.

Any current acceptance testing field technician who is not a certified general electrician may enter an apprenticeship training program to become a certified general electrician. Because of the complexity of these systems, simply teaching non-certified general electrician's the generic "acceptance test" is not sufficient to ensure performance of advanced lighting systems. The CALCTP certification builds on the knowledge and experience base possessed by certified general electricians and is not a stand-alone certification that could be meaningfully provided to persons without that knowledge and experience base.

At the February 27th Workshop, several opponents made anecdotal (and unsubstantiated) claims that there may be a few exceptionally qualified acceptance testers that would not currently meet the CALCTP pre-qualification requirements. Such exceptions, however, cannot make the rule. The goal is to ensure that all acceptance testers are exceptionally qualified and capable; and the only way to do that is to institute baseline training, experience and certification requirements. The skill, knowledge and experience of a field technician who performs acceptance testing must be objectively determined. That determination can only be done by uniform training, experience and certification requirements. Staying with the current system based upon anecdotal evidence of exceptional outliers will not achieve the desired uniform results.

Q3. How would training and certification requirements for acceptance testing Field Technicians help to address concerns related to any lack of enforcement by building departments of the acceptance requirements?

Building departments do not independently verify the accuracy or completeness of the advanced lighting system acceptance tests and forms. Moreover, due to the complexity of the advanced lighting control systems, there would be no way for building departments to meaningfully verify or assess these tests and forms without both the CALCTP certification and sufficient resources and time for verification. The proposed CALCTP certification requirement ensures that acceptance testers possess sufficient training, experience, expertise, and competence to meaningfully comply with acceptance testing and documentation requirements. Moreover, it also ensures quality control by requiring oversight by CALCTP-

certified contractors and by creating accountability through the risk of the contractor and electrician losing their CALCTP certification if they fail to perform tests and falsify documents. The quality control and accountability created by requiring CALCTP certification of both contractors and electricians is particularly important since independent third party testing is not being required.

Q4. Are certified general electricians who are also certified by the California Advanced Lighting Controls Training Program (CALCTP) uniquely qualified to serve as acceptance testing Field Technicians for lighting controls?

Yes, certification of a general electrician does not ensure, in and of itself, appropriate levels of skill, knowledge and training on installation and testing of advanced lighting control systems. CALCTP training provides specialized advanced technical training not available through other existing California Community College, JATC curriculum, or Cal Labor Fed programs. Existing programs provide relevant basic lighting controls instruction necessary to provide certified general electricians with the foundation for undertaking the CALCTP training, but they do not take the place of such training. Advanced lighting controls also require a more thorough understanding of computers, programming, complex systems and interactive networks - something not always associated with electrical installation.

IOMUs have expressed strong concern that electricians and contractors are currently not adequately trained in how to correctly install, program, test, and maintain advanced lighting control systems resulting in a high rate of call-backs or disabling/removal of advanced lighting control systems by frustrated consumers. IOMUs have identified a shortage of advanced lighting control qualified electricians as the principal barrier to wider adoption of the technology.

CALCTP was expressly developed to address this issue by creating a specialized certification for electricians and contractors. The program is integrated with and builds on the state's existing apprenticeship training programs.

Q5. Should any electricians who are not certified general electricians (e.g., C-10 licensed electrical contractors, electricians working for school districts or plants, which are not required by state law to be certified general electricians), be allowed to serve as acceptance testing Field Technicians for lighting controls?

To be eligible to enroll in CALCTP training, applicants must be California state-certified general electricians. Only state-certified general electricians who work for licensed class C-10 Electrical Contractors are eligible under state law to install and maintain advanced lighting controls in commercial buildings. Moreover, state-certified general electricians have received the prerequisite experience and training upon which the CALCTP certification course builds.

This eligibility requirement was discussed at length during the creation of the CALCTP certification. The IOUs, in particular, were insistent that CALCTP certified technicians must be state certified general electricians. This prequalification requirement is necessary to ensure a sufficient, *verifiable* base-knowledge and experience-level to make the CALCTP certification meaningful.

Q6. Should other licensed engineers or contractors who are not CALCTP certified be allowed to serve as acceptance testing Field Technicians for lighting controls?

An electrical engineering degree only provides assurance of capability and training in system design, not installation and testing. The problem this proposal addresses is not design, but testing of the installation. CALCTP certified electricians have received many hours of hands-on training and knowledge making them more qualified than the average engineer to actually install and test these systems. CALCTP electricians understand how advanced lighting control systems work in the field and have the experience and on-the-ground knowledge to calibrate, program, inspect, and test these systems. They also are expert at trouble-shooting systems that do not perform as specified and/or designed.

Similarly, a contractor's license provides no assurance of knowledge base, experience and competency to do acceptance testing correctly. As testified at the February 27th workshop, acceptance testing of advanced lighting controls is a specialized field. Participants who have taken the CALCTP certification have commented that they had little or no idea that they had been installing and testing these systems incorrectly until they obtained their CALCTP training and certification.

Q7. Should CALCTP certified general electricians, who are not employed by lighting contractors who also are CALCTP certified, be allowed to serve as acceptance testing Field Technicians for lighting controls?

No, CALCTP contractor and general electrician certification was designed as a package based on stakeholder input, including the input of the CEC and utilities. It is not intended to be a standalone certification. This dual certification requirement provides critical quality control assurances. Stakeholders found that if a contractor does not understand the advanced lighting system sufficiently, he will not manage or support the job appropriately. Furthermore, by putting the Contractor's CALCTP certification on the line in addition to the general electrician's, pressure on the CALCTP electrician to quickly test and pass a system is reduced and a high level of accountability and quality control is achieved.

Q12. If persons other than those that are proposed by IBEW or the Sheet Metal Workers are allowed to serve as acceptance testing Field Technicians, should they be certified for professional qualifications? If so, what certifications would be appropriate for each of the licensed contractors, engineers or building commissioning providers?

CALCTP certification is not limited to persons proposed by IBEW. There is no requirement for union membership. Training is available at community colleges throughout the state and the Southern California Edison Energy Education Center.

Currently, CALCTP is the only organization that provides certification that ensures sufficient training, experience, expertise, competence, oversight and accountability to ensure proper performance of acceptance tests for advanced lighting systems. While other classes of professionals exist, no testimony or comments have been presented identifying a certification for licensed contractors, engineers or commissioning agents that claims to be equivalent, or even close, to CALCTP and to ensure that all recipients of that certification are qualified to perform acceptance tests on advanced lighting systems. Any alternative professional certification program would have to require sufficient hands-on experience and broad enough theoretical training to ensure the ability to apply generic acceptance testing and documentation requirements to the wide variety of new and rapidly-evolving advanced lighting controls that may be encountered in the field. CALCTP is not aware of any other such certifications. In numerous

discussions within the lighting controls industry – including with California IOMUs – no other such certifications were identified.

Q13. What are the requirements or prerequisites for certified general electricians and CALCTP certification in terms of:

a. Training and Education

i. For the certification course

ii. Prerequisites required to qualify for taking the certification course

iii. Costs associated with each of the above

b. Professional experience

c. Registration, certification or licensing fees

d. Professional licensing or certification

e. Continuing education

f. Renewal

g. Other key qualification requirements

Are these requirements different for licensed engineers or persons with other qualifications that allow for waiving of some of the requirements? If so, how?

a. Training and Education

i. For the certification course:

CALCTP provides intensive training in a certification program that requires at least 10 hours of prerequisite study, plus 50 hours of classroom and lab instruction, for a total of at least 60 hours. The CALCTP training course is divided into seven modules consisting of both lecture and lab activities. Each "lecture" contains one or more interactive components, including group discussions, device demonstrations and/ or calculation exercises. The corresponding lab period, following the lecture, allows the attendee to directly apply what has been learned by installing the devices on an electrical lab board, under the supervision of the CALCTP-certified instructor(s). Trainees learn about 1) lamp and ballast systems; 2) line voltage switching controls; 3) low voltage switching controls; 4) dimming controls; 5) occupancy sensors; 6) photosensors; and, 7) advanced lighting control systems, and must successfully demonstrate competency for each module. The hands-on lab work requires a 100% pass rate, and the trainee must also pass a validated written exam. At the conclusion of CALCTP, successful trainees receive an IOMU-recognized certification in advanced lighting control technology. This

certification permits General Electricians to work on advanced lighting control projects which are then eligible for IOMU incentive programs to promote the use of energy efficient lighting and control systems which reduce energy demand.

Based on CALCTP training requirements, specifications and follow-up with CALCTP trainees, one certified instructor instructs no more than 10 participants in the class/lecture portions of the training modules, which make up 10 hours of the 65 hour course. For the laboratory portion of instruction, CALCTP requires one certified instructor per 5 trainees due to the complexity of the laboratory sequences. Lab Trainer Board equipment was specified and tested by the engineering and research staff of U.C.-Davis CLTC, IOMUs, and manufacturing partners. ICF International and CLTC, provide quality assurance for Lab Trainer Board specifications, training delivery, and technology upgrades. A maximum of two trainees are permitted per Lab Trainer Board face; Lab Trainer Boards are double-faced. The seven sequential laboratory modules require a tested competency of 100% to proceed to the next module. CALCTP maintains rigorous standards and currently has an 87% certification rate of trainees. The demanding CALCTP curriculum meets IOMU and lighting control manufacturers' needs for competent installation, programming, testing, commissioning, troubleshooting, and maintenance of these energy efficient systems.

ii. Prerequisites required to qualify for taking the certification course:

Because the lecture and lab work moves along at a challenging pace, all participants must be equally prepared prior to enrollment. To ensure this is the case, all participants taking the 50 hour classroom and lab Technical Program must be certified general electricians holding a valid California state certification license. In addition, CALCTP requires completion of the on-line Lighting Controls Association website modules *EE101: Introduction to Lighting Control, EE102: Switching Control, EE103: Dimming Control,* and *EE201: Daylight Harvesting.* These pre-requisite Lighting Controls Association courses and tests take approximately 10-12 hours to complete.

iii. Costs associated with each of the above:

There has been no cost for CALCTP certification or the prerequisite Lighting Controls Association Training modules due to approximately $500,000 in California Employment Training Panel ("ETP") funds, and a $5,000,000 grant awarded under

the American Recovery and Reinvestment Act of 2009: Energy Training and Partnership Grants, as implemented by the U.S. Department of Labor's Employment and Training administration. 100% of the grant funds are used to support this program. The fact that "no cost" is associated with this program has been widely advertised. The California Employment Training Panel has encouraged CALCTP to apply for an additional $750,000 in funding to continue subsidizing CALCTP certifications. That application is pending.

Even without continued subsidies, the cost of CALCTP certification is very modest. At community colleges, it is the cost of only 50 hours of class TIME at community college tuition rates. It is expected that CALCTP certification classes at the Utility Energy Training Center will remain free of charge. CALCTP certification classes at the JATCs are expected to be covered by members' dues or, at the most, cost just a few hundred dollars in additional fees.

Furthermore, most of the cost in time or money for CALCTP certification is already built into the continuing education requirements currently required of certified general electricians. Certified general electricians must complete 32 hours of continuing education units every 3 years, all of which may be met by obtaining the CALCTP certification.

b. Professional experience:

Participants must be certified general electricians holding a valid state license.

c. Registration, certification or licensing fees:

There is no registration, certification or licensing fee due to a $5,000,000 grant awarded under the American Recovery and Reinvestment Act of 2009: Energy Training and Partnership Grants, as implemented by the U.S. Department of Labor's Employment and Training administration. 100% of the grant funds are used to support this program. (See answer to Question 13(a)(iii) above).

d. Professional licensing or certification:

All participants must hold a valid general electrician license in the State of California to receive CALCTP certification.

e. Continuing education:

Certified electricians must complete 32 hours of continuing education units every 3 years. At this time, there is no separate continuing education requirement for CALCTP. The CALCTP Technical Program counts for 50 hours of this continuing education requirement.

f. Renewal:

At this time, there is no renewal requirement. In consultation with its partners (including the Commission), CALCTP may consider imposing a reasonable renewal requirement at some point in the future.

g. Other key qualification requirements:

CALCTP is open to both union and non-union electricians. Training is available at Joint Apprenticeship and Training Centers, community colleges and the Southern California Edison Energy Education Center.

h. Eligibility to waive or fulfill any of the above requirements with other licenses, degrees or qualification:

The CALCTP certification builds on the knowledge and experience base possessed by certified general electricians and is not a stand-alone certification that could be meaningfully provided to persons without that knowledge and experience base. The requirements to become a certified general electrician, however, vary depending on experience.

Q16. If CALCTP certification is required for acceptance testing by a Field Technician, should that be limited to the acceptance testing related to advanced controls that are the subject of CALCTP training?

Advanced lighting controls are complex systems that rely on the whole of the system to operate correctly. Accordingly, CALCTP certification should be required for acceptance testing of the entire lighting control system, not just the controls. Per the Commission's proposed Title 24 amendments, a lighting control system is defined as two or more components to be installed in the field to provide all of the functionality required to make up a fully functional and compliant lighting control.

Q17. What are the number, location and coverage of persons meeting the certification requirements advocated by IBEW that are in California? Specifically:
a. Number statewide
b. In what cities are the certified persons located?
c. What locations of the state do not have certified persons within 50 miles?
d. What locations of the state have only a limited number of certified persons to cover the expected demand for acceptance testing?

a. Number statewide:

As of February 29, 2012, there are 1,457 CALCTP-certified electricians in the State of California. Per the current demand for training, it is expected that by December 2012, there will be 2,795 CALCTP-certified electricians, and by the January 2014 effective date of the proposed regulations there will be over 4,155 CALCTP-certified electricians in California.

b. In what cities are the certified persons located?

By the end of 2013, CALCTP-certified electricians will be located in all major cities within the state ranging in the south from San Diego north to the Oregon border. Currently, there are 85 CALCTP-certified trainers in California teaching the course in 28 CALCTP facilities across the state. To ensure uniform availability of CALCTP certification training, special training opportunities will be offered in those regions without current permanent training programs.

c. What locations of the state do not have certified persons within 50 miles?

All regions of the state will have certified electricians and contractors by 2013. The demand for advanced control lighting systems is expected to be greatest in the more developed areas of the state that already have numerous CALCTP-certified electricians. In areas with less demand for advanced control lighting systems, experienced advanced lighting control system installers already regularly must travel substantially more than 50 miles to install these systems. The CALCTP certification is filling that void and will ensure that qualified installers and acceptance testers of advanced lighting systems will be available in every region of the state by 2013.

d. *What locations of the state have only a limited number of certified persons to cover the expected demand for acceptance testing?*

CALCTP will be able to train approximately 340 electricians per quarter between now and December, 2012 bringing the total projected trained to 2,795. Training will be offered in every region of the state. CALCTP currently has the capacity to train approximately 340 electricians per quarter. More than 4,155 electricians are expected to be trained and certified by the effective date of this proposal, January, 2014. This should easily provide more than adequate numbers to meet the demand for lighting controls acceptance testing throughout the state.

Q18. Should the Energy Commission adopt criteria for approval of industry certification programs? If so, what should the criteria be? What qualifications of current certification programs should be included? Should the criteria include the following:

a. *Approval by the Commission of the curriculum for the certification program to include training in the acceptance testing requirements that are applicable to that program*
b. *Demonstration of the trainee's mastery of the acceptance testing requirements in the field*
c. *Quality assurance to ensure ongoing quality performance in completing the acceptance testing*
d. *Complaint resolution to address concerns regarding certified Field Technician performance*
e. *Documented evidence of actions by the certification program to correct improper performance, provide remedial training, provide coaching or mentoring, provide penalties or decertification of certified persons who repeatedly fail to provide quality acceptance testing*
f. *Field experience prior to certification; field experience required to be under the supervision of a certified person*
g. *Certification open to both union and non-union technicians*
h. *Certification program administered by non-profit organization which encourages wide participation and is certified by ANSI, ISO or other appropriate accreditation body*
i. *Certification program free of conflict of interests and maintains code of ethics*

j. Certification actively works with local building departments to promote compliance and enforcement of acceptance requirements and provides acceptance requirement training free of cost to local building department personnel in conjunction with training to technicians

k. Other recommended criteria

In addition to providing appropriate educational content and hands-on training opportunities, a qualified certification program should provided sufficient oversight and accountability measures to ensure quality control. A qualified certification program should also require relevant field experience prior to certification.

A mere list of specific program components is unlikely to provide sufficient information to adequately assess the quality of a certification program. Any proposed certification program should be assessed by the Commission on a case by case basis.

CALCTP certification builds on the experience, training and skills of certified general electricians. This requirement provides a knowledge and experience base sufficient to allow for the higher-level CALCTP certification training. CALCTP-certified general electricians must show high levels of competency in: (1) advanced lighting control system-specific analytical/problem solving skills; (2) Integration of mechanical and electrical systems for advanced lighting control installation and commissioning; (3) safety procedures for low-voltage retrofits (>50 volts) to control medium voltage systems (120 to 480 volts); (4) accurate and effective tuning, calibration, and programming of advanced lighting control systems; (5) proper documentation procedures of auditing, testing, and commissioning of advanced lighting control systems; and (6) web-enabled advanced lighting control commissioning, off-site troubleshooting, and maintenance protocols. CALCTP certification requires valuable field-transferable laboratory experience and requires a 100% pass rate for all seven sessions of the 40 hours of hands-on lab training, plus passing a rigorous two-hour final written CALCTP certification exam.

CALCTP has scientifically validated the efficacy of the training curriculum content and methods. ICF International and U.C.-Davis CLTC provide quality control and conduct site visits to ensure the integrity of the curriculum and training. The CALCTP program has also been reviewed and recognized by California IOMUs as providing the skills and proficiencies needed to implement advanced lighting control technologies with IOMU commercial customers.

III. ADDITIONAL QUESTIONS RAISED BY STAFF AND PUBLIC AT FEBRUARY 27TH WORKSHOP

A. Does CALCTP Certification Train or Test to the Title 24 Acceptance Tests and Forms?

No, training to the acceptance test is neither sufficient, nor necessary. CALCTP certification provides a broader knowledge base that ensures that CALCTP-certified electricians will have the big picture training necessary to ensure that CALCTP-certified electricians will be able to meaningfully apply any generic acceptance testing requirements to a broad variety of advanced lighting systems. This training will also enable CALCTP-certified electricians to easily adapt to any future changes in Title 24 acceptance testing requirements.

For example, Gary Leder, Vice President of Electric Service and Supply, stated that they found that even when their CALCTP-certified electricians encountered a product from a different manufacturer than the product they learned about in the CALCTP program, *"the general theology of the technology taught during the course helped them so that they could figure out this particular product."*

While not essential to provide the required knowledge and ability, CALCTP will explore, including adding specific training on Title 24 acceptance testing and forms, as part of its future certification curriculum. Training to the acceptance tests and forms will not, in itself, provide the skill, knowledge and experience level necessary to apply these generic acceptance tests and forms to the wide variety of constantly-evolving advanced lighting controls that will be encountered in the field.

B. Would Requiring Certification by CALCTP Create a Monopoly or Be Exclusionary?

No. CALCTP is open to all state-certified general electricians regardless of labor affiliation. To ensure that eligible candidates have multiple options to take the course at a time and location that is convenient to them, CALCTP operates 28 training facilities across the state in a variety of environments, including Joint Apprenticeship Training Centers, community colleges, and the Southern California Edison Energy Education Center.

At the February 27th Workshop, the Western Electrical Contractors Association (WECA) organization made the unfounded claim that requiring CALCTP certification would be exclusionary. Yet WECA, itself, has promoted the availability of CALCTP certification to its members; thus demonstrating the openness of this program. (See WECA announcement of CALCTP training, http://www.goweca.com/newsDetail.asp?newsUID=1365&Category=NEWS_C.)

Far from being exclusionary or establishing a monopoly, CALCTP was developed by a wide spectrum of industry players. CALCTP was established as a unique collaboration of the California Energy Commission, the University of California Davis-California Lighting Technology Center, the California Community College Chancellor's Office—Advanced Transportation Technology Energy Campuses, California Investor-Owned and Municipal Owned Utilities, CA LMCC/IBEW-NECA, the National Equipment Manufacturers Association, and ICF International. The CALCTP Board has representatives from the targeted industry leader—California's Investor and Municipal Owned Utilities. Currently, the Board is co-chaired by Southern California Edison, and also has representatives from Pacific Gas and Electric, San Diego Gas and Electric, and Sacramento Municipal Utilities District.

Furthermore, the proposal would not prohibit another equivalent certification program from seeking Commission approval in the future. Currently, however, CALCTP is the only organization that provides certification that ensures sufficient training, experience, expertise, competence, oversight and accountability to ensure proper performance of acceptance tests for advanced lighting systems. While other types of "certifications" exist, no testimony or comments has been presented identifying any other certification that claims to be equivalent, or even close, to CALCTP or claims to ensure that *all* recipients of that "certification" are qualified to perform acceptance tests on advanced lighting systems. In developing its program, CALCTP searched for other relevant certifications, but was unable to find any that provided the requisite training and quality assurances.

At the February 27th Workshop, several other programs were mentioned, but only in the context of programs that could potentially be modified (at some undetermined future time) to provide similar training and certification. At that undetermined future time when some other program asserts it provides equivalent certification and oversight, the CEC can then appropriately review that program to see if it should also be adopted. However, the theoretical future development of an

equivalent, additional certification is not a reasonable argument to delay requiring CALCTP certification now.

IV. CONCLUSION

In order to ensure that Title 24 requirements for reducing the energy demand of commercial lighting systems will result in actual real world energy savings, it is critical that acceptance testing and documentation of advanced lighting systems be performed accurately and completely. CALCTP is the only available certification that ensures that acceptance testers have the experience, knowledge, and competence to properly perform advanced lighting system acceptance testing. Without such certification, there is no assurance that the cost of complying with Title 24 energy saving requirements will actually result in expected energy savings.

Delaying certification requirements now would delay the effective testing and operation of energy efficient systems that achieve their efficiency potential and that are critical to meeting California's energy efficiency goals. A delay of requiring CALCTP certification now would also significantly reduce the likelihood that buyers of advanced lighting control systems would realize the return on investment they pay for and expect to be delivered.

We appreciate your consideration of these comments. We would be happy to respond to any additional or follow-up questions that the Commission may have regarding this proposal.

Sincerely,

Thomas A. Enslow

TAE:ljl