To:	From:
The California Energy Commission 1516 Ninth Street Sacramento, California	NLCAA 3301 E. Hill Street, Suite 408 Signal Hill, California

TITLE

APPLICATION FOR APPROVAL OF NLCAA, (THE NATIONAL LIGHTING CONTRACTORS ASSOCIATION OF AMERICA), AS A LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN CERTIFICATION PROVIDER.

DESCRIPTION

Submission to the California Energy Commission to Certify NLCAA, (The National Lighting Contractors Association of America), as a LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN CERTIFICATION PROVIDER as defined in section ∮ 10-102 DEFINITIONS, per The 2013 Building Energy Efficiency Standards, per ∮ 10-103-A; as required to train persons for duties described in ∮ 130.4 (c), and to further provide certification of individuals to meet the definitions of ∮ 10-102 ACCEPTANCE TEST TECHNICIAN, LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN and ∮ 10-102 ACCEPTANCE TEST EMPLOYER, LIGHTING CONTROLS ACCEPTANCE TEST EMPLOYER and to further certify LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIANS as FIELD TECHNICIANS as defined by ∮ 10-102 DEFINITIONS.

∮ 10-103-A (a) Scope.

NLCAA recognizes and verifies that as a Certification Provider it must abide by the requirements of: ∮ 10-103-A

∮ 10-103-A (b) 2. Industry Coverage by Certification Providers – "… certification costs …"

NOTICE: NLCAA reserves the right to reduce or waive any charges specified by this document or shown in Appendix 3: Fee Summary.

To Whom it may Concern:

ABSTRACT

The National Lighting Contractors Association of America, (NLCAA), proposes to become a Lighting Controls Acceptance Test Technician and Lighting Controls Acceptance Test Employer provider by submitting an application as specified in ∮10-103-A (e)(1) of the 2013 Building Energy Efficiency Regulations and adhering to the specifications outlined in this document conforming to the 2013 Building Energy Efficiency Regulations - ∮10-103-A (c)(1)-(3) including documentation included to demonstrate that the certification of Field Technicians and Employers shall include training and testing on the Building Energy Efficiency Standards lighting control acceptance testing procedures and the Building Energy Efficiency Standards acceptance testing compliance documentation for lighting control systems.

In addition: The National Lighting Contractors Association of America, (NLCAA), will provide information meant to demonstrate the ability to provide "reasonable access to certification" per ∮ 10-103-A (b) 2, both within and outside the confines of section 10-103-A (c) B. (iii).

In addition: The National Lighting Contractors Association of America, (NLCAA), will provide information meant to demonstrate the ability to "Provide Annual Reports" per ∮ 10-103-A (d).

Within the confines of this document, the Lighting Controls Acceptance Test Technician and Lighting Controls Acceptance Test Employer Certification Provider shall be deemed to be NLCAA – referred to variably as the "National Lighting Contractors Association of America" or "NLCAA". Within the confines of this document the business entity of California Electrical Training, Inc., 3301 E. Hill Street, Suite 408, Signal Hill, CA, shall be variably referred to as: "California Electrical Training" or "CET".

Within the confines of this document, a Certified Lighting Controls Acceptance Test Technician shall be referred to variably as: "AT Technician" or "ATT" or "Acceptance Test Technician" or "Field Technician".

Within the confines of this document, a Certified Lighting Controls Acceptance Test Technician Employer shall be referred to variably as: "ATT Employer" or "Acceptance Test Technician Employer" or "Acceptance Test Employer" or "Employer" or "Lighting Controls Acceptance Test Employer".

Within the confines of this document, a Lighting Controls Acceptance Test Technician Certification Provider may be referred to as an "ATTCP".

Within the confines of this document, the California Energy Commission may be referred to as the "CEC".

For the purposes of this document: "lab", "laboratories", or "labs" shall refer to "hands-on experience" or "hands-on" as referred to in the 2013 Building Energy Efficiency Standards; ∮ 10-103-A (c) 3. A. and/or ∮ 10-103-A (c) 3. B. (ii) respectively. Additionally, "lab" demonstrations may be viewed by Acceptance Test Technician Employer candidates.

Overview of Document Contents

Quality Assurance and Accountability

"… The Certification Provider(s) shall provide reasonable access to certification … class availability"

NLCAA herewith provides their pledge to provide reasonable access to all pre-qualified potential participants in the Lighting Controls Acceptance Test Technician certification program and all pre-qualified potential participants in the Lighting Controls Acceptance Test Employer certification program. "Reasonable access" shall include, (but not be limited to): Printed copies of course materials, "live" "slide-shows" of course material, online access of course materials, classroom lectures on course material, electronic copies of course materials, hard copy video versions of course materials, hard copy video versions of course material "slide shows", hard copy videos of lectures on course materials, and hard copy or downloadable multi-media presentations of course material and online streaming versions of course materials including "webinars" as specified in ∮ 10-103-A (c) C.; Printed quizzes, online quizzes, electronic copies of quizzes, verbal quizzes in a classroom setting, and hard copy or downloadable multimedia quizzes; Secure and timed online testing of course material, and printed and proctored testing on course material in a classroom setting; Hands-on "labs" or exercises, live "lab" demonstrations, online videos or slide-shows of "lab" demonstrations, hard copy video versions of video recordings of "lab" demonstrations or "slide-shows" of "lab" demonstrations, and hard copy or live interactive ("webinar") versions of "lab" demonstrations, or downloadable multimedia demonstrations of "labs". Additionally, if circumstances require, training may be provided by actual testing of lighting control installations or through the use of an Energy Commission-approved "challenge test" as described in section 13.11.1 of the 2013 Nonresidential Compliance Manual for the 2013 Building Energy Efficiency Standards.

"reasonable access"

The pre-qualification procedures will not be denied to any applicant based on: Gender identity, Race or ethnicity, Religious persuasion, Country of origin, Native language, Educational background, or Political beliefs or affiliations. Affiliation or membership in any union, collective-bargaining group or association will not be an impediment to an applicant's pre-qualification. The pre-qualification procedures will not be denied to any applicant based on any physical or mental infirmity unless opined by NLCAA or their agents or proxies that said physical or mental infirmity will prevent said applicant from fulfilling their obligations under ∮ 130.4 (c). ŧ

ŧ Any applicant denied the pre-qualification procedure for any reason other than work history will be supplied a non-binding "warning" form signed by a director of NLCAA or their agent or proxy, additionally a "Pre-qualification Appeal" form will be presented to said applicant simultaneously, which they may submit either physically or electronically. (see Attachment 9) ŧ

ŧ Note: If applicant files an appeal form, (see Attachment 10), they will be considered motivated enough to be admitted to the course and upon successful completion will have proved NLCAA, their agents or proxies incorrect and will be granted certification.

A detailed description of the criteria and review process used by the ATTCP, (NLCAA), to determine the relevance of technician professional experience shall be presented under ∮ 10-103-A (c) 3. B. (iii) – Prequalification.

∮ 10-103-A (c) **Qualifications and Approval of Certification Providers.**

This document will constitute the written application for NLCAA, and shall include a summary and any related background documents as attachments to this document.

∮ 10-103-A (c) 1**. Requirements for Applicant ATTCPs to Document Organizational Structure.**

The requirements of ∮ 10-103-A (c) 1. Shall be met by the appending of Attachment 1, "Bylaws of National Lighting Contractors Association of America".

Supervision, and support of the acceptance test training and certification process shall be supplied through independent oversight by the Training Consultant for California Electrical Training as detailed in the portion of this application addressing: ∮ 10-103-A (c) F**. Quality Assurance and Accountability.**

∮ 10-103-A (c) 2. Requirements for Certification of Employers. "certification"

The course material provided by NLCAA supports three goals in training Acceptance Test Technician Employers:

1) To find and understand specific information in the four code reference documents – The (current) Building Energy Efficiency Standards regarding their responsibilities, an overview of the design and compliance process and the mandatory lighting controls that must be installed, the (current) Appliance Efficiency Regulations, the (current) Reference Appendices Testing procedures, and the (current) forms other than the Acceptance Testing Forms.

2) To have a basic understanding of the Acceptance Tests the Acceptance Test Technician must perform and a basic understanding of how to fill out and verify the Acceptance Testing Forms.

3) Their responsibilities to the State of California and to NLCAA in signing Acceptance Testing forms.

Additional training material for Acceptance Test Employers will be detailed under ∮ 10-103-A (c) 3. C. – Lighting Controls Acceptance Test Employer Training.

The steps in Lighting Controls Acceptance Test Employer certification are as follows:

1) Prequalification (∮ 10-103-A (c) B. (iii))

2) Payment of fees and signing NLCAA Lighting Controls Acceptance Test Technician Employer Associate contract (see Attachment 11)

3) Training and testing

§ 10-103-A (c) 2. Requirements for Certification of Employers. "certification"

Prequalification (§ 10-103-A (c) B. (iii))

"Participation in the technician (Employer) certification program shall be limited to persons …"

Conforming to the standards of NLCCA, "Participation in the (employer) certification program shall be limited to persons" described, (and not excluded or rejected), by the following requirements:

Requirements for the Employer Application:

- If the employer applicant or any of the owners, officers or partners of the employer had a contractor license or business license suspended or revoked any time in the last five years, they are not eligible to become a NLCAA Employer.
- If the Employer applicant or any of the its owners, officers or partners has ever been found liable in a civil suit or found guilty in a criminal action for fraud, theft, or any other acts of dishonesty, they are not eligible to become a NLCAA Employer.
- The Employer applicant must have applicable business license(s) or business tax certificate(s) number for all offices that are registering to employ acceptance test technicians.
- NLCAA Employers must have a comprehensive general liability insurance policy with a policy limit of at least $1,000,000.
- NLCAA Employers must have workers compensation insurance and provide a copy with the application.
- NLCAA Employers must have completed the online NLCAA Lighting Controls Acceptance Test Technician Employer application

$\oint$ 10-103-A (c) 2. **Requirements for Certification of Employers.** "… oversight of Acceptance Test Employers to ensure quality control and appropriate supervision … for Acceptance Test Technicians"

Oversight of Acceptance Test Technician EMPLOYERS and their FIELD TECHNICIANS, (as defined in $\oint$ 10-102), is provided through the Audit Procedure, (Attachment 5), and Audit Form, (Attachment 4). Both parties are required to fill out the form together. This ensures that Acceptance Test Technician EMPLOYERS and their FIELD TECHNICIANS maintain communication through the years. The Audit Form is filled out for a specific job. The Audit Form requires input regarding the types of lighting controls installed and their locations as identified on the Acceptance Forms. Additionally, some data values are required – as well as "Yes / No / I Don't Know" responses. This form shall have its data values compared against the data values entered on the Acceptance Testing Form(s) for the job in question by a computer "expert system" or human agent. If a discrepancy is detected between the Audit Form and Acceptance Testing Form(s) data values – the parties in question shall be contacted via telecommunications[1], (if practical), by an NLCAA director, or NLCAA agent, or by the CET training consultant. Should the response(s) of the aforementioned Acceptance Test Technician Employer(s) and/or Acceptance Test Technician(s), (Field Technician(s)), be deemed unsatisfactory by the aforementioned NLCAA director, or NLCAA agent, or the CET training consultant – then the Audit Field Inspection[1] process shall be set in motion per the NLCAA Audit procedure. ($\oint$ 10-103-A (c) 3. F." Quality assurance …")

$\oint$ 10-103-A (c) 2. **Requirements for Certification of Employers.** The Audit Process:

The Audit form in its present state is appended as attachment 4, (Audit Form).

The Audit Procedure is appended as attachment 5, (Audit Procedure).

$\oint$ 10-103-A (c) 2. **Requirements for Certification of Employers.** "support for Acceptance Test Technicians"

Support for Acceptance Test Technicians will be aided by the inclusion of extra material into the Lighting Controls Acceptance Test Technician Employer course covering recommended equipment required by their Field Technicians. This course material will include: Equipping Field Technician(s) with - appropriate light meters; appropriate directional, dimmable light sources of proper technology; appropriate voltmeters, ammeters, or multi-meters as required. This course material will include: Safety training for working on combination "high" and "low" voltage systems; Test equipment ratings; Lock-out/tag-out procedures. Every effort will be made to impart the complexity of certain acceptance testing procedures to the Lighting Controls Acceptance Test Technician Employer to aid in properly bidding jobs and allowing the Lighting Controls Acceptance Test Technician sufficient time to properly complete testing procedures.

§ 10-103-A (c) 3**. Requirements for Applicant ATTCPs to Document Training and Certification Procedures.**

Acceptance Test Technician Employer Training Course manual and materials – Rev01B

Lighting Controls Acceptance Test Technician Course manual and materials – Rev01B

§ 10-103-A (c) 3. **A. Training Scope**.

Lighting Controls Acceptance Test Technician Course – Rev01B

Theoretical training such that Acceptance Test Technicians demonstrate their ability to apply the Building Energy Efficiency Standards acceptance testing and documentation requirements shall include (but not be limited to): Material made public by the dissemination techniques detailed previously as:

"… The Certification Provider(s) shall provide reasonable access to certification … class availability"

The quizzes shall be of varying length and consist of multiple-choice-type questions with four answers of which one and only one is the correct response.

The examination shall be 50 questions in length and consist of multiple-choice-type questions with four answers of which one and only one is the correct response. An applicant achieving a score of 35 correct responses shall be deemed to have passed the written or interactive examination. A passing score on the examination is required for certification.

§ 10-103-A (c) B. (i) **Curricula**

Theoretical training topics shall include, (but not be limited to), the topics presented in Attachment 2: "Lighting Controls Acceptance Test Technician Class Outline".

Additionally, the NLCAA Lighting Controls Acceptance Test Technician course of instruction shall meet or exceed the requirements of: § 10-103-A (c) B. (ii) **Hands-on training**

§ 10-103-A (c) 3. **B.** (i) **Curricula.**

Lighting Controls Acceptance Test Technician Training.

The Lighting Controls Acceptance Test Technician course of instruction as outlined in Attachment 2: "Lighting Controls Acceptance Test Technician Class Outline"; shall meet the following requirements:

The NLCAA Acceptance Test Technician Certification Provider training curricula for Lighting Control Acceptance Test Technicians shall include, but not be limited to, the analysis, theory, and practical application of the following:

a) Lamp and ballast systems;

b) Line voltage switching controls;

c) Low voltage switching controls;

d) Dimming controls;

e) Occupancy sensors;

f) Photosensors;

g) Demand responsive signal inputs to lighting control systems;

h) Building Energy Efficiency Standards required lighting control systems;

i) Building Energy Efficiency Standards required lighting control system-specific analytical/problem solving skills;

j) Integration of mechanical and electrical systems for Building Energy Efficiency Standards required lighting control installation and commissioning;

k) Safety procedures for low-voltage retrofits (<50 volts) to control line voltage systems (120 to 480 volts);

l) Accurate and effective tuning, calibration, and programming of Building Energy Efficiency Standards required lighting control systems;

m) Measurement of illuminance according to the Illuminating Engineering Society's measurement procedures: (IESNA Lighting Handbook)

n) Building Energy Efficiency Standards acceptance testing procedures, and;

o) Building Energy Efficiency Standards acceptance testing compliance documentation for lighting controls.

§ 10-103-A (c) B. (ii) **Hands-on training**

Hands-on training to practice and certify competency in the technologies and skills necessary to perform the acceptance tests shall be supplied by laboratories which allow illuminance data to be collected and analyzed to provide proper values for entry on acceptance testing forms: NRCA-LTI-03-A and NRCA-LTI-04-A.

The laboratories allow measurements to be taken on the following simulated scenarios:

1) Continuously Dimmed Closed-Loop Daylighting System

2) Four Stage, Step Switched, Open-Loop Daylighting System

3) Five-Room Building with Demand Response System (that works)

4) One-Room Warehouse with Demand Response System (that fails)

Additional hands-on training to practice and certify competency in the technologies and skills necessary to perform the acceptance tests shall be supplied by laboratories which allow visual observations to be used to provide proper entries on acceptance testing forms: NRCA-LTI-02-A and NRCA-LT0-02-A.

5) Automatic Time Switch (Indoor) with Part-OFF Occupancy Sensor and Override

6) Automatic Time Switch (Outdoor) Program Verification and Demonstration

The estimated total time for completion of all laboratories is 4 hours.

Labs 2), 3), and 4) are combined to one "Lab stand[1]"; as are labs 5) and 6). Maximum time allowed to complete labs confined to one "Lab stand[1]" is 60 minutes. Completed labs must have proper data entered correctly on the lab form. Failed labs may be reattempted twice with permission of NLCAA. Laboratories must be satisfactorily completed for certification of a student.

The technical specifications for all laboratories is contained in Appendix 1 – Laboratory Descriptions

The laboratory instruction and lab sheets will be contained in the course material submitted for the NLCAA Lighting Controls Acceptance Test Technician Course.

"… reasonable access to certification … considering factors such as certification costs commensurate with the complexity of the training being provided, prequalification criteria, class availability, and curriculum."

The charge for the NLCAA Lighting Controls Acceptance Test Technician Certification course of instruction is: $1500.$\underline{00}$

ϕ 10-103-A (c) B. (iii) **Prequalification**

Lighting Controls Acceptance Test Technician Training Candidate Prequalification.

The prequalification procedure for the NLCAA Lighting Controls Acceptance Test Technician Training course consists of three steps.

1) Submission of an application for approval to take the course of instruction.

2) Verification of "at least three years of verifiable professional experience and expertise in lighting controls and electrical systems as determined by the Lighting Controls ATTCP …", (NLCAA).

3) Successful completion of prerequisite online courses ł.

Upon successfully completing - (to the satisfaction of NLCAA) - all of the steps above: Candidates must sign a Lighting Controls Acceptance Test Technician Training Associate, ATTCP, (NLCAA), contract establishing that they agree to, and are aware of, any financial or physical obligations they will have to the ATTCP, (NLCAA), and to the State of California, as a Lighting Controls Acceptance Test Technician. Candidates for NLCAA Lighting Controls Acceptance Test Technician certification must present proof of successful completion of the prerequisite online coursesł prior to beginning training.

Step 1)

Candidates for prequalification must fill out an online, "Application for NLCAA Technician Certification" which includes a questionnaire requesting lighting controls experience, (both initial and most recent date), for the following categories of lighting controls:

a) Occupancy Sensors and Photosensors;

b) Low Voltage and Line Voltage Dimming;

c) Demand Response Systems;

d) Time-based Scheduling Systems;

e) Indoor Lighting Controls;

f) Outdoor Lighting Controls

ł "Preliminary online courses" are: The Lighting Controls Association, [www.lightingcontrolsassociation.org]; "Education Express" courses - currently located at: [http//aboutlightingcontrols.org/education].

Courses EE-101; EE-102 §1, §2; EE-103 §1, §2; EE-105; EE-110; EE-201 (70% to Pass)

ϕ 10-103-A (c) B. (iii) **Prequalification**

In addition, applicants must state whether they are:

A) Electrical Contractors;

B) State Certified General Electricians;

C) Professional Engineers;

D) Commissioning Professionals;

E) Controls Installation and Startup Contractors;

F) Qualifying Military Veterans;

G) Qualifying Certified Individuals;

H) Individuals Holding an Engineering or Science Degree

The ability to upload supporting documents to NLCAA for the above is provided.

NLCAA shall store uploaded supporting documents in the candidates' folder on NLCAAs secure server.

NLCAA will review each application to verify the following: attached License, Certificate, Professional Engineer License, copy of DD-214 (or equivalent), copy of State or Federal certification, Transcript, Diploma, or Certificate of training – (as applicable), (see Attachment 8). Commissioning Professional documentation and/or Controls Installation and Startup documentation shall be a letter from one or more manufacturers of lighting controls stating that the individual in question works for them, or a third-party approved by them, and is qualified to commission, or to install and start up, their lighting control products. Anyone failing to produce proper documentation will not be eligible for certification as a Lighting Controls Acceptance Test Technician.

Step 2)

Verification of "at least three years of verifiable professional experience and expertise in lighting controls and electrical systems as determined by the Lighting Controls ATTCP …", must be supplied by the applicant to NLCAA in a form deemed acceptable.

Step 3)

Proof of Successful completion of prerequisite online courses ł is required prior to beginning the course of training.

ł "Preliminary online courses" are: The Lighting Controls Association, [www.lightingcontrolsassociation.org]; "Education Express" courses - currently located at: [http//aboutlightingcontrols.org/education].

Courses EE-101; EE-102 §1, §2; EE-103 §1, §2; EE-105; EE-110; EE-201 (70% to Pass)

$\oint$ 10-103-A (c) B. (iii) **Prequalification**

Individuals applying to NLCAA for Lighting Controls Acceptance Test Technician Training by virtue of Military Experience, Prior Certification, or Degree Earned may use this professional experience to *partially* fulfill the "… three years of verifiable professional experience and expertise in lighting controls and electrical systems" requirement.

Details may be found in Attachment 8, "Prequalification based on Military Experience, Certification, or Degree Earned".

Prior to beginning training: prequalified NLCAA Lighting Controls Acceptance Test Technician Training Candidates must read, review and sign the "NLCAA Lighting Controls Acceptance Test Technician Associate Contract" (Attachment 12). NLCAA Lighting Controls Acceptance Test Technician Training Candidates must state that they are aware of any additional physical or monetary burdens they will face in the future as NLCAA Certified Lighting Controls Acceptance Test Technicians.

$\oint$ 10-103-A (c) B. (iv) **Instructor to Trainee Ratio**

To ensure integrity and efficacy of the curriculum and program, the personal experience of the CET Training Consultant suggests that a ratio of no more than 18 students per instructor is to be allowed for lectures and examination procedures – this applies to both the Lighting Controls Acceptance Test Technician curriculum and the Lighting Controls Acceptance Test Employer curriculum.

In the personal experience of the CET Training Consultant a ratio of no more than 9 students per instructor is to be allowed for overseeing the laboratory exercises which are part of the Lighting Controls Acceptance Test Technician curriculum.

$\oint$ 10-103-A (c) B. (v) **Tests**

As previously described under $\oint$ 10-103-A (c) 3. A. Training Scope.

Lighting Controls Acceptance Test Technician candidates shall pass a 50 question multiple-choice examination to achieve certification – in addition to successful completion of hands-on training. A 70%, or greater, score on this examination will be required to pass the examination.

Also;

In addition to the requirements of: $\oint$ 10-103-A (c) C. Lighting Controls Acceptance Test Employer Training:

Lighting Controls Acceptance Test Employer candidates shall pass a 27 question multiple-choice examination to achieve certification. A 70%, or greater, score on this examination will be required to pass the examination.

§ 10-103-A (c) B. (vi) **Recertification**

Regardless of the original date of certification of a Lighting Controls Acceptance Test Technician, (Field Technician), (as defined in §10-102 DEFINITIONS, of The 2013 Building Energy Efficiency Standards), recertification shall be required each time the Building Energy Efficiency Standards is updated with new and/or modified acceptance test requirements. In addition, NLCAA Directors may, at their discretion, require recertification when a new Building Energy Efficiency Standards is released as part of the "code cycle" process.

Regardless of the original date of certification of a Lighting Controls Acceptance Test Employer, (as defined in §10-102 DEFINITIONS, of The 2013 Building Energy Efficiency Standards), recertification shall be required each time the Building Energy Efficiency Standards is updated with new and/or modified acceptance test requirements. In addition, NLCAA Directors may, at their discretion, require recertification when a new Building Energy Efficiency Standards is released as part of the "code cycle" process.

Both Lighting Controls Acceptance Test Technicians, (Field Technicians), and Lighting Controls Acceptance Test Employers must pass an examination of 27 questions in length which consists of multiple-choice-type questions with four answers of which one and only one is the correct response. A participant achieving a score of 19 correct responses shall be deemed to have passed the written or interactive examination. A passing score on the examination is required for recertification.

Prior to beginning recertification training[1]: qualified NLCAA Lighting Controls Acceptance Test Technician Training recertification candidates must read, review and sign the "NLCAA Lighting Controls Acceptance Test Technician Associate Contract" (Attachment 12). NLCAA Lighting Controls Acceptance Test Technician Training Candidates must state that they are aware of any additional physical or monetary burdens they will face in the future as NLCAA Certified Lighting Controls Acceptance Test Technicians. The signing of this "NLCAA Lighting Controls Acceptance Test Technician Associate Contract" will render any previously signed and dated "NLCAA Lighting Controls Acceptance Test Technician Associate Contract" null and void. The NLCAA Lighting Controls Acceptance Test Technician shall be assumed to be operating under the current contract and any predated "NLCAA Lighting Controls Acceptance Test Technician Associate Contract(s)" shall be considered null and void.

Prior to beginning recertification training[1]: qualified NLCAA Lighting Controls Acceptance Test Employer Training recertification candidates must read, review and sign the "NLCAA Lighting Controls Acceptance Test Employer Associate Contract" (Attachment 11). NLCAA Lighting Controls Acceptance Test Employer Training Candidates must state that they are aware of any additional physical or monetary burdens they will face in the future as NLCAA Certified Lighting Controls Acceptance Test Employers. The signing of this "NLCAA Lighting Controls Acceptance Test Employer Associate Contract" will render any previously signed and dated "NLCAA Lighting Controls Acceptance Test Employer Associate Contract" null and void. The NLCAA Lighting Controls Acceptance Test Technician Employers shall be assumed to be operating under the current contract and any predated "NLCAA Lighting Controls Acceptance Test Employer Associate Contract(s)" shall be considered null and void.

$\oint$ 10-103-A (c) B. (vi) **Recertification**

If, (in the opinion of the majority of Directors of NLCAA) - "… each time the Building Energy Efficiency Standards (are) updated with new and/or modified acceptance test requirements." – is occurring with excessive frequency, or that changes are too insubstantial, to require "Recertification" under $\oint$ 10-103-A (c) B. (vi) – NLCAA certified Lighting Controls Acceptance Test Technicians, or NLCAA certified Lighting Controls Acceptance Test Technician Employers shall not be required to undergo "Recertification Training[1]": Said NLCAA certified persons shall, rather, undergo "Acceptance Code Update Training[1]".

"Acceptance Code Update Training[1]" will not require the signing of a new "NLCAA Lighting Controls Acceptance Test Employer Associate Contract" or "NLCAA Lighting Controls Acceptance Test Technician Associate Contract". Acceptance Code Update Training[1] may/or may not require a quiz to complete.

NLCAA reserves the right to present either: "Acceptance Code Update Training[1]" or "recertification training[1]" by any avenue presented to address:

"… The Certification Provider(s) shall provide reasonable access to certification … class availability"

The anticipated length of recertification training[1] is 8 hours – (minimum)

The anticipated length of Acceptance Code Update Training[1] is 2 hours – (minimum)

"… (re)certification costs commensurate with the complexity of the training being provided …"

The charge for recertification training and examination shall be $400.00

The charge for Acceptance Code Update Training shall be $110.00

∮ 10-103-A (c) C. **Lighting Controls Acceptance Test Employer Training.**

∮ 10-103-A (c) 3. **A. Training Scope**.

Acceptance Test Technician Employer Training - "REV01B"

Theoretical training such that Acceptance Test Technicians Employers demonstrate their understanding of the Building Energy Efficiency Standards acceptance testing and documentation requirements shall include (but not be limited to), course material provided by methods listed to address:

"… The Certification Provider(s) shall provide reasonable access to certification … class availability"

The quizzes shall be of varying length and consist of multiple-choice-type questions with four answers of which one and only one is the correct response.

The examination shall be 27 questions in length and consist of multiple-choice-type questions with four answers of which one and only one is the correct response. An applicant achieving a score of 19 correct responses shall be deemed to have passed the written or interactive examination. A passing score on the examination is required for certification.

Theoretical training topics shall include, (but not be limited to), the topics presented in Attachment 3: "Acceptance Test Technician Employer Class Outline"

Practical training such that Acceptance Test Technicians Employers demonstrate their understanding of the Building Energy Efficiency Standards acceptance testing and documentation requirements shall include (but not be limited to), a demonstration which allows the collection of illuminance data to be observed and analyzed to provide proper values for entry on acceptance testing form: NRCA-LTI-03-A. The demonstration generates measurements taken on the following simulated scenario:

1) Continuously Dimmed Closed-Loop Daylighting System

Prior to beginning certification training: prequalified NLCAA Lighting Controls Acceptance Test Employer Training certification candidates must read, review and sign the "NLCAA Lighting Controls Acceptance Test Employer Associate Contract" (Attachment 11). NLCAA Lighting Controls Acceptance Test Employer Training Candidates must state that they are aware of any additional physical or monetary burdens they will face in the future as NLCAA Certified Lighting Controls Acceptance Test Employers.

"… reasonable access to certification … considering factors such as certification costs commensurate with the complexity of the training being provided, prequalification criteria, class availability, and curriculum."

The charge for the NLCAA Lighting Controls Acceptance Test Technician Employer Certification course of instruction is: $650.$\underline{00}$

§ 10-103-A (c) 3. **C. Lighting Controls Acceptance Test Employer Training.**

"… instruction that covers the scope and process of the *acceptance tests* in Building Energy Efficiency Standards, Section 130.4"

Theoretical training topics shall include, (but not be limited to), the topics presented in Attachment 3: "Acceptance Test Employer Class Outline".

§ 10-103-A (c) 3. **C. Curricula.**

The NLCAA Acceptance Test Employer Certification Provider training curricula for Lighting Control Acceptance Test Employers shall include, but not be limited to, the analysis, theory, and practical application of the following:

[130.4(a)]

Building Energy Efficiency Standards required lighting control systems: Building Energy Efficiency Standards Sections; 10-103 (a), 130.1, 130.2, 140.6 (a), 140.6 (a) 1., 140.6 (a) 2., 140.6 (b) 3., 140.6 (d) and the 2012 Appliance Efficiency Regulations Section: 1605.3 (l) (2)

1. Certifying that plans, specifications, installation certificates, and operating and maintenance information meet the requirements of part 6)(for acceptance testing): Building Energy Efficiency Standards Sections; 130.4 (a), 130.4 (b), 140.6 (a) 2., 140.6(d), 130.0 (d), 110.9 (a), 110.9 (b) – Forms; NRCC-LTI-01-E, NRCC-LTI-02-E, NRCC-LTO-01-E, NRCC-LTO-02-E , NRCI-LTI-02-E, NRCI-LTO-02-E, NRCI-LTI-05-E

2. Completing all applicable procedures in Reference Nonresidential Appendix NA7.6, NA7.7, and NA7.8: Forms; NRCA-LTI-02-A, NRCA-LTI-03-A, NRCA-LTI-04-A, NRCA-LTO-02-A

3. Certifying that Automatic Daylight Controls comply with Section 130.1 (d) and Reference Nonresidential Appendix NA7.6.1 Acceptance Testing and submitting Acceptance Form NRCA-LTI-03-A;

4. Certifying that lighting shut-OFF Controls comply with Section 130.1 (c) and Reference Nonresidential Appendix NA7.6.2 Acceptance Testing and submitting Acceptance Form NRCA-LTI-02-A;

a) Occupancy sensors;

b) Automatic Time Switches;

c) Power adjustment factor for large open-plan offices;

5. Certifying that demand responsive lighting control systems comply with Section 130.1 (e) and Reference Nonresidential Appendix NA7.6.3 Acceptance Testing and submitting Acceptance Form NRCA-LTI-04-A;

∮ 10-103-A (c) 3. **C. Lighting Controls Acceptance Test Employer Training.**

6. Certifying that outdoor lighting control systems comply with Section 130.2 (a) and 130.2 (c) and Reference Nonresidential Appendix NA7.8 Acceptance Testing and submitting Acceptance Form NRCA-LTO-02-A;

[130.4(b)]

1. Verifying that when a lighting control system is installed to comply with lighting control requirements in part 6, that the appropriate Installation Form is present and complete;

2. Verifying that when an Energy Management Control System is installed to comply with lighting control requirements in part 6, that the appropriate Installation Form is present and complete;

[130.4(c)]

Completing Certificate of Acceptance documentation in accordance with Building Energy Efficiency Standards Section 10-103 (a) 4. and information from Sections 10-102, 10-103-A, and 110.9 will be presented.

$\oint$ 10-103-A (c) D. **Complaint Procedures**

"… Procedures for accepting … complaints regarding the performance of any certified acceptance test technician or employer"

The NLCAA Complaint Form, (Attachment 6), may be transmitted to NLCAA, an agent, or proxy, in writing or by E-mail. Additionally an interactive NLCAA Complaint Form is present on the NLCAA website for use by concerned individuals.

"… explain how building departments and the general public will be notified of these (complaint) procedures …"

When an authorized party is granted access to the results of Acceptance Testing on the NLCAA database server, a Portable Document Format file representing the State Acceptance Testing Compliance Form will be generated for download. Appended to this file download will be a copy of the NLCAA Complaint Form and Complaint Procedure in Portable Document Format, (pdf), rendering it immediately accessible to the authorized parties. Authorized parties may view a list of Field Technicians and Employers who have had their certifications suspended or revoked due to complaint proceedings.

"… Procedures for addressing … complaints regarding the performance of any certified acceptance test technician or employer"

A copy of the NLCAA complaint procedure, (Attachment 7), is appended to this document. Upon receipt of a Complaint Form generated by the offended party, (including any Director of NLCAA), the Complaint Process shall be set in motion.

Step 1: A Complaint Form is received, (or generated by), NLCAA or their agent.

Step 2: Within 3 business days of Complaint Form receipt, (or generation), by NLCAA or their agent; a notification, (including the contents of the Complaint Form), shall be sent to the Lighting Controls Acceptance Test Employer(s) and /or Technician(s) concerned. This notification shall be sent by both: e-mail and certified mail.

Step 3: The ATT Employers or AT Technicians notified shall respond within 20 business days of the receipt of the Complaint Notification. This response shall be in writing.

Step 4: Once the written responses are received - a committee of 3 NLCAA Directors will determine what, (if any), disciplinary action(s) will be invoked.

As a courtesy to other Acceptance Test Technician Certification Providers an e-mail shall be transmitted to them if appropriate when Field Technicians or Employers have not complied with complaint procedure disciplinary actions within the time frame allowed.

A disciplinary action spreadsheet will be made available online for perusal by CEC staff.

$\oint$ 10-103-A (c) D. **Complaint Procedures**

Disciplinary Actions can include the following, (or a combination of the following):

1) NLCAA directs ATT Employer(s) and AT Technician(s) to complete, (one or more as specified within "Step 4" of the Complaint Process), Audit Form(s) per the Audit Procedure Process for any prior or subsequent jobs as desired by NLCAA.

2) NLCAA informs ATT Employer(s) and/or AT Technician(s) that, (one to six as specified within "Step 4" of the Complaint Process), "Form Review(s)[1]" will be accomplished, with applicable charges.

3) NLCAA directs ATT Employer(s) and/or AT Technician(s) that, (one to ten as specified within "Step 4" of the Complaint Process), "Disciplinary Form Review(s)[1]" will be accomplished, with applicable charges.

4) NLCAA directs ATT Employer(s) and/or AT Technician(s) to complete, (one or more as specified within "Step 4" of the Complaint Process), "Complaint Procedure Field Inspection(s)[1]" with applicable charges .

5) NLCAA directs ATT Employer(s) and/or AT Technician(s) to complete, (one or more as specified within "Step 4" of the Complaint Process), "Disciplinary Field Inspection(s)[1]" with applicable charges.

6) NLCAA directs ATT Employer(s) and/or AT Technician(s) to complete "Recertification Training[1]", ($\oint$ 10-103-A (c) B. (vi) **Recertification),** with applicable charges.

7) NLCAA directs ATT Employer(s) and/or AT Technician(s) to complete "Repeat Training[1]", ($\oint$ 10-103-A (c) C. or $\oint$ 10-103-A (c) B.**),** with applicable charges up to original certification training fee.

8) NLCAA directs ATT Employer(s) and/or AT Technician(s) to complete "Disciplinary Training[1]", with applicable charges.

9) NLCAA informs ATT Employer(s) and/or AT Technician(s) that their certification status is "suspended[1]" for a period of up to 5 months, or until "Disciplinary Training[1]", with applicable charges, is successfully completed. Suspension status for those involved will be posted on the NLCAA website.

10) NLCAA directs ATT Employer(s) and/or AT Technician(s) they have been deemed unsuitable as an associate of NLCAA and, (pending a ruling of any written appeal, ("Step 5" of the Complaint Process)), they will have their Lighting Controls Acceptance Test Technician and/or Employer certifications revoked.

A summary of findings and recommended disciplinary actions shall be sent, via certified mail, to the ATT Employer(s) and/or AT Technician(s) in question within 20 business days.

Step 5) Upon receipt of NLCAA's findings: the ATT Employer(s) and/or AT Technician(s) in question shall have 20 business days to appeal the decision of NLCAA regarding any disciplinary action recommended. This appeal shall be in writing.

Step 6) Within 15 business days of receiving the appeal from the ATT Employer(s) and/or AT Technician(s) in question, NLCAA shall render a final disposition on the matter which may include any, (or none), of the disciplinary measures outlined in "Step 4", of the complaint procedure, above.

$\oint$ 10-103-A (c) D. **Complaint Procedures**

Upon final disposition by NLCAA, the ATT Employer(s) and/or AT Technician(s) in question shall have 60 days to comply with NLCAA's disciplinary actions specified. Satisfactory compliance shall be determined by the directors of NLCAA. Failure to comply with NLCAA's specified disciplinary actions may lead to certification revocation procedures or to NLCAA generating a fresh complaint against the ATT Employer(s) and/or AT Technician(s) in question. Appropriate notifications shall be sent to the California Energy Commission in accordance with Building Energy Efficiency Standards Section 10-103-A (d).

" … whether in their entirety certification costs (are) commensurate with the complexity of the training being provided …"

The charge for an Audit Procedure Process is: Nothing; $0

The charge for a Complaint Procedure Form Review[1] is: $150.$\underline{00}$

The charge for a Disciplinary Form Review[1] is: $200.$\underline{00}$

The charge for a Complaint Procedure Field Inspection[1] is: $400.$\underline{00}$

The charge for a Disciplinary Field Inspection[1] is: $1500.$\underline{00}$ per day

The charge for Recertification[1] Training is: $400.$\underline{00}$

The charge for Repeat Training[1] is: up to $650.$\underline{00}$ for ATT Employers, up to $1500.$\underline{00}$ for AT Technicians

The charge for Disciplinary[1] Training[*] is: $2000.$\underline{00}$

[*]The length of Disciplinary Training[1] is 4 days.

$\oint$ 10-103-A (c) E. **Certification Revocation Procedures**

Certification Revocation Procedures are initiated through the NLCAA Complaint Process, ($\oint$ 10-103-A (c) D. **Complaint Procedures**). NLCAA directors or their agents may initiate a Complaint Procedure involving any ATT Employer(s) and/or AT Technician(s) holding NLCAA certifications.

Complaint proceedings may be initiated against any ATT Employer(s) and/or AT Technician(s) holding NLCAA certifications for reasons including, (but not limited to):

Poor quality work, (including, but not limited to);

Erratic or incorrect Acceptance Testing Form entries,

Use of substandard equipment, material or techniques leading to Acceptance Testing errors,

Using incorrect analysis techniques leading to Acceptance Testing errors,

Ineffective work, (including, but not limited to);

Failure to use NLCAA Acceptance Testing Data Entry Software without a compelling reason, or without written permission from NLCAA,

Incomplete Acceptance Testing Form entries,

Incomplete Acceptance Testing procedures,

Damage to equipment without restoring, repairing, or replacing same,

Damage to building structure, fixtures, or furnishings without restoring, repairing, or replacing same,

Modifying program settings in equipment without restoring original settings,

Chronic failure to appear at jobsite(s) within scheduled periods,

Failure to perform Acceptance Tests;

Falsification of documents, (including but not limited to);

Falsification of "check-off" items,

Falsification of data entries,

Signing for another Field Technician or Acceptance Test Employer,

Knowingly allowing another Field Technician or Acceptance Test Employer to sign for you,

Failure to comply with the documentation requirements of, (including but not limited to) - Building Energy Efficiency Standards: Sections: 10-103 (a); 10-103-A; or Title 24 parts 1 or 6 - (including but not limited to);

Failure to test all specified lighting controls on **Compliance** Form: NRCC-LTI-02-E,

Failure to test all specified lighting controls on **Compliance** Form: NRCC-LTO-02-E,

Failure to verify specified lighting control system or EMCS entries on **Installation** Form: NRCI-LTI-02-E,

Failure to verify specified lighting control system or EMCS entries on **Installation** Form: NRCI-LTO-02-E,

Or;

Other specified actions deemed to require a Complaint Form filing by NLCAA.

ATT Employer(s) and/or AT Technician(s) in question, facing suspension or revocation of certification through final disposition in the Complaint Procedure shall be informed via certified mail. Upon proof of delivery: NLCAA, (director, agent or proxy), shall institute the certificate suspension and revocation procedure within 3 business days.

$\oint$ 10-103-A (c) E. **Certification Revocation Procedures**

Continued …

Upon exhaustion of the appeal process contained within the Complaint Procedure, (Attachment 7), the ATT Employer(s) and/or AT Technician(s) in question, (if facing suspension[1] or revocation of certification[1]), may contact NLCAA by telecommunications[1] within 3 business days of receiving notice of imminent suspension of, or revocation of, certification status as described in the paragraph above. This will be the last chance for the ATT Employer(s) and/or AT Technician(s) to present a compelling argument against their certification suspension or revocation. This last communication between the NLCAA and the ATT Employer(s) and/or AT Technician(s) shall not extend beyond the 3 business day period mentioned previously in this paragraph. The burden to contact NLCAA, (director or agent), as described in this paragraph shall lie entirely upon the ATT Employer(s) and/or AT Technician(s) in question.

The ATT Employer(s) and/or AT Technician(s) NLCAA Associate Contract, (Attachment 11 or Attachment 12, as applicable), will be considered null and void after 3 business days from NLCAA receiving proof of delivery of the certification revocation notice to the ATT Employer(s) and/or AT Technician(s) in question unless special accommodations have been made.

Any Arbitration agreement signed by ATT Employer(s) and/or AT Technician(s) who have had their certification revoked or suspended shall be considered to remain binding, valid, and in effect.

When an ATT Employer and/or AT Technician has had their certification suspended or revoked, notice shall be made to the CEC and all other currently approved Lighting Controls ATTCPs via certified mail as soon as practical. A list of all persons with certifications revoked, suspended, or surrendered shall be posted on the NLCAA website for public purview.

$\oint$ 10-103-A (c) E. **Certification … Procedures –** Surrender of Certification

Any ATT Employer(s) and/or AT Technician(s) working under a NLCAA Associate Contract may surrender their respective certifications with NLCAA whenever they choose. Notice must be given to NLCAA in writing. The ATT Employer(s) and/or AT Technician(s) NLCAA Associate Contract, (Attachment 11 or Attachment 12, as applicable), will be considered null and void immediately upon NLCAA receiving notice of certification surrender.

Any Arbitration agreement signed by ATT Employer(s) and/or AT Technician(s) who have surrendered their certification shall be considered to remain binding, valid, and in effect.

When an ATT Employer and/or AT Technician have surrendered their certification, notice shall be made to the CEC and all other currently approved Lighting Controls ATTCPs via certified mail as soon as practical.

§ 10-103-A (c) F. **Quality Assurance and Accountability**

"The ATTCP shall describe … how their certification business practices include … independent oversight and accountability measures … "

Independent oversight of the Lighting Controls ATTCP, (NLCAA), will be conducted by California Electrical Training, (CET). This oversight will be conducted by the current Training Consultant associated with California Electrical Training. NLCAA, (the ATTCP), shall be responsible to the CET Training Consultant who will oversee the development of, and reasonable access to, course material developed by the CET Training Consultant or others. NLCAA Directors shall be accountable to the CET Training Consultant in the following manner(s):

1) The CET Training Consultant may demand, at his discretion, that NLCAA ATTCP training material be modified, discarded, replaced, or augmented at any time. NLCAA shall have 60 calendar days to reply to this request and must show proof to the CET Training Consultant that said training material has been modified in the training material dissemination process.

2) The CET Training Consultant shall reserve the right to inspect and approve any initial changes to course material prior to expert review of the training curricula.

3) The CET Training Consultant may, at his discretion, demand a vote of NLCAA directors for the removal of one of their number.

"… independent oversight of the certification processes and procedures …"

Independent oversight of the Lighting Controls ATTCP, (NLCAA), certification processes and procedures will be conducted by California Electrical Training through the offices of the CET Training Consultant, (currently: Robert A. Shearer, BSEE).

The CET Training Consultant shall insure that the ATTCP, (NLCAA), abides by the requirements of the Building Energy Efficiency Standards Sections 10-103-A (c) and 10-103-A (d), as detailed in this application required by Section 10-103-A (e).

Any variance from this application effecting the certification processes and procedures detailed in this application shall be duly reported to the California Energy Commission, (CEC), by the CET Training Consultant.

"… accountability measures, such as, … building department surveys to determine acceptance testing effectiveness …"

When an authorized party is granted access to the results of Acceptance Testing on the NLCAA database server, a Portable Document Format file representing the State Acceptance Testing Compliance Form will be generated for download. Appended to this file download will be a copy of the NLCAA Building Department Survey Form (Attachment 13), in Portable Document Format, (pdf), rendering it immediately accessible to the authorized parties.

$\oint$ 10-103-A (c) F. **Quality Assurance and Accountability**

Continued …

"… accountability measures, such as … expert review of the training curricula developed for Building Energy Efficiency Standards, Section 130.4."

Expert review of training curricula developed (currently) by Robert A. Shearer, BSEE, for Building Energy Efficiency Standards, Section 130.4 and satisfying 10-103-A (c) B. (i), as appropriate, will be provided by directors and associates of the NLCAA. Current expert review is provided by Mr. Gary Flamm, and Mr. Rick Miller, P.E., as well as Mr. Bernardo Torres, (representing the Electrical Contractor community).

"… accountability measures, such as … certification process evaluations …"

Certification process evaluation by NLCAA shall take the form of the "Form Review[1]": "Audit Procedure Form Review", "Complaint Procedure Form Review[1]", "Disciplinary Form Review[1]", or "Random Form Review[1]", as defined for this document, (see Appendix 2, Definitions).

"Form Review(s)[1]" may be dictated by the Audit Procedure, Complaint Procedure, or "Randomly[1]". Said Form Reviews(s) will be completed by: a computer implemented "expert system", or by a human agent.

"Disciplinary Form Reviews[1]" will be completed by a human agent.

"Random Form Reviews[1]" will be completed by a human agent or by a computer implemented "expert system".

The "Form Review[1]" process allows NLCAA directors or their agents to review Acceptance testing forms for signs of "irregularities" or "inconsistences" as determined by NLCAA directors or their agents.

Under Audit Procedure rules, "Form Review(s)[1]" allow comparisons between Audit Forms submitted for a job and Acceptance testing forms submitted for the same job.

Under Complaint Procedure rules, "Form Review(s)[1]" allow the same comparisons as under the Audit Procedure, but additional past Audit Forms may be pulled for comparison, with applicable charges. No more than 6 "Form Review(s)[1]" may be invoked during a single complaint proceeding.

Under Complaint Procedure rules "Disciplinary Form Review(s)[1]" may be called for in any quantity up to 10 as specified by NLCAA directors. This allows the inspection of any or all Acceptance Testing Forms and/or Audit Forms previously submitted by the NLCAA Certified AT Technician(s) and/or ATT Employer(s) under scrutiny to be examined, with applicable charges.

$\oint$ 10-103-A (c) F. **Quality Assurance and Accountability**

Continued …

"**Random Form Reviews[1]**" will apply to each Field Technician under certification. A "Random Form Review[1]" will be instigated upon an Acceptance Test Technicians first completed assignment. Two "Random Form Review[1]" triggers[1] will be placed in the NLCAA database manager when a NLCAA Certified AT Technician has completed 20 acceptance testing jobs. A flag[1] will be produced by the NLCAA database manager at this point and two instances of two rolls of a ten-sided die will be cast to determine which two of the next 100 jobs scheduled for the Field Technician will undergo a Random Form Review[1]. Should the results of either of these Random Form Reviews[1] be deemed unsatisfactory by NLCAA or its' agent; NLCAA will begin Complaint Proceedings against the Field Technician and ATT Employer involved – with a recommended finding of a "Complaint Procedure Field Inspection[1]" and one or more Audit Procedures. Two triggers[1] will be inserted and flags[1] produced as described above by the NLCAA database manager at 120 jobs and for each subsequent 100 jobs – and this process shall be repeated.

A "Random Form Review[1]", (like any Form Review[1]), shall be deemed "unsatisfactory" if it can be discerned by inspection that any of the actions outlined under: $\oint$ 10-103-A (c) E. **Certification Revocation Procedures,** (including but not limited to), "Poor quality work", "Ineffective work", or, "Other specified actions …": have possibly occurred.

An "**Audit Procedure Form Review[1]**" is a Form Review[1] which also allows correlation between Acceptance Testing data and the Audit Form submitted for the job in question. In addition to the "unsatisfactory" criterion for a Form Review[1], mismatched or missing data between Acceptance Testing data and the Audit Form will trigger an Audit Procedure Field Inspection[1].

"… Reasonable access … provided by … certification costs commensurate with the complexity of …"

The charge for an Audit Procedure Form Review[1] is: Nothing; $0

The charge for a Form Review[1] is: $75.$\underline{00}$

The charge for a Random Form Review[1] is: $75.$\underline{00}$

The charge for a Complaint Procedure Form Review[1] is: $150.$\underline{00}$

The charge for a Disciplinary Form Review[1] is: $200.$\underline{00}$

§ 10-103-A (c) F. **Quality Assurance and Accountability**

"… accountability measures, such as … visits to building site(s) where certified technicians are completing acceptance tests …"

The "Field Inspection[1]" procedure is summarized below and found in Appendix 2 of this application. The requirement for a "Field Inspection[1]" will be imposed upon AT Technician(s) and/or ATT Employer(s) due to a variety of circumstances:

"Audit Procedure Field Inspection", (Attachment 5), due to unsatisfactory results of Audit Procedure;

The Complaint Procedure, (Attachment 7), due to disciplinary action of NLCAA directors;

Quality Assurance "Scheduled Field Inspection[1]", scheduled as summarized below;

"Random Field Inspection[1]", scheduled due to ongoing "1% Random Sampling[1]"

All of the above are "Field Inspections[1]", and vary as to whether they apply to a future site to undergo Acceptance Testing by Field Technicians, or as noted below.

In brief: A "**Field Inspection[1]**" is a "(visit) to (a) building site where certified technicians are completing acceptance tests". This site visit shall be arranged by an Acceptance Test Technician Employer for the Field Technician under inspection. This "Field Inspection[1]" should occur on the next possible occasion after the Employer has been notified by First Class Mail – (and telecommunications[1], when convenient for NLCAA). A "Field Inspection[1]" will consist of a minimum 2-hour site visit during which the Field Technician performing acceptance testing will be observed and interviewed. In addition: any or all of the following may occur; verification of acceptance tests completed, observation of acceptance testing methods, testing of lighting controls by NLCAA or their agent(s), testing of additional lighting controls not sampled by the Acceptance Test Technician(s) performing acceptance tests.

An "**Audit Procedure Field Inspection[1]**" is a "Field Inspection[1]" as described above;

A "**Random Field Inspection[1]**" is a "Field Inspection[1]" as described above - ***EXCEPT*** it is performed at a visit to a site that has been previously tested. A "Random Field Inspection[1]" requirement is generated by the 1% Random Selection process, (Attachment 14). A Random Field Inspection[1] should be completed within 24 hours of acceptance testing completion at a site if feasible.

A "**Scheduled Field Inspection[1]**" is a "Field Inspection[1]" as described above;

A "**Complaint Procedure Field Inspection[1]**" is a "Field Inspection[1]" as described above – ***EXCEPT*** it is performed at a visit to a site that produced an acceptance testing complaint. A "Complaint Procedure Field Inspection[1]" requirement is only generated by the Complaint Procedure, Attachment 7.

$\oint$ 10-103-A (c) F. **Quality Assurance and Accountability**

Continued …

A "**Scheduled Field Inspection[1]**" system has been devised to satisfy the requirements of CEC staff. The schedule for requiring a "Scheduled Field Inspection[1]" is thus:

After an Acceptance Test Technician has completed 11 acceptance testing assignments, the NLCAA database manager software will produce a "flag[1]" indicating that the Field Technician has reached the required number of acceptance tests to demand a "Field Inspection[1]". The employer of record for this 11th job shall receive a notification, (as described under 'In brief: A "Field Inspection[1]"', (above)). Should the results of this "Field Inspection[1]" prove satisfactory – the Field Technician in question will have their "Scheduled Field Inspection[1]" schedule shifted to every 25th acceptance testing job – otherwise, NLCAA will generate a Complaint Procedure against the Field Technician in question, and the scheduling criteria will remain: every 12th acceptance testing job.

Should the results of the Field Technicians'' ' every 25th acceptance testing jobs "Field Inspection[1]"' be satisfactory then the 'every 25th job' scheduling criteria will be increased to 'every 50th job'; otherwise: complaint generated by NLCAA and scheduling criteria remains the same.

Should the results of the Field Technicians'' ' every 50th acceptance testing jobs "Field Inspection[1]"' be satisfactory then the 'every 50th job' scheduling criteria will be increased to 'every 100th job'; otherwise: complaint generated by NLCAA and scheduling criteria remains the same.

Thereafter, every 100th acceptance testing job for the Field Technician shall require a Field Inspection[1].

A "Random Field Inspection[1]" is a "Field Inspection[1]".

"**Random Field Inspections[1]**" will apply to each Field Technician under certification. A "Random Field Inpection[1]" trigger[1] will be placed in the NLCAA database manager when a NLCAA Certified AT Technician has completed 20 acceptance testing jobs. A flag[1] will be produced by the NLCAA database manager at this point and two rolls of a ten-sided die will be cast to determine which of the next 100 jobs scheduled for the Field Technician will undergo a Random Field Inspection[1]. Should the results of this inspection be deemed unsatisfactory by NLCAA or its' agent; NLCAA reserves the right to increase the sampling rate to two inspections out of 100 jobs and will initiate Complaint Proceedings. Should the results of this Random Field Inspection[1] be deemed unsatisfactory by NLCAA or its' agent; NLCAA will begin Complaint Proceedings against the Field Technician and ATT Employer involved – with a recommended finding of a "Complaint Procedure Field Inspection[1]" and one or more Audit Procedures. Trigger(s)[1] will be inserted and flag(s)[1] produced as described above by the NLCAA database manager at 120 jobs and for each subsequent 100 jobs – and this process shall be repeated.

∮ 10-103-A (c) F. **Quality Assurance and Accountability**

Continued …

A "Disciplinary Field Inspection[1]" is *NOT* a "Field Inspection[1]", but is separately defined.

A "Disciplinary Field Inspection[1]" can only be instituted by a Complaint Procedure, attachment 7.

A "**Disciplinary Field Inspection[1]**" shall be a visit to a building site where certified technicians are completing acceptance tests, or have previously completed acceptance tests. This building site shall be the building site identified in the Complaint Procedure[1]. The Acceptance Test Technician Employer shall arrange with the building owner(s) of the property shown on the complaint in question to allow NLCAA or their agents to enter the property in question to perform testing to verify the Acceptance Testing results. This retesting may encompass anything up to and including a complete retest of any or all lighting controls installed at the property in question. This retesting should be arranged to occur within 60 calendar-days of notification that an inspection is required, or; If for any compelling reason the "Disciplinary Field Inspection[1]" cannot be carried out in the time frame allotted, a new Complaint Form, (Attachment 6), will be generated by NLCAA for any or all of the Acceptance Test Technician(s) or Acceptance Test Technician Employer(s) involved in the original complaint. The recommended finding of this new complaint will be retraining[1].

Under special circumstances, (as determined by NLCAA directors), a "Disciplinary Field Inspection[1]" may be allowed to occur at a site other than the site involved in the Complaint Procedure[1].

A "Disciplinary Field Inspection[1]", (as defined in Appendix 2), is a thorough inspection verifying, <u>at a minimum</u>, (should they exist):

a) 2 (previously tested) Occupancy sensors, and 2 (untested) Occupancy sensors;

b) 1 (previously tested) Building Timer

c) 1 (previously tested) Automatic Daylighting System

d) Automated Demand Response System (if practical)

"… reasonable access to certification … considering factors such as certification costs commensurate with the complexity of the training being provided …"

The charge for a Field Inspection[1] is: $400.<u>00</u>

The charge for a Disciplinary Field Inspection[1] is: $1500.<u>00</u> per day

§ 10-103-A (c) F. **Quality Assurance and Accountability** – Refresher Training

In the opinion of the directors of NLCAA: the Acceptance Test Technician course of instruction is complex enough to require periodic retraining for Acceptance Test Technicians. To this end, as a courtesy to our Field Technicians an online refresher course will be made available – free of charge.

§ 10-103-A (c) G. **Certification Number and Verification of ATT Certification Status.**

NLCAA or their agent(s) or proxies shall issue a unique Lighting Controls Acceptance Test Technician identification number.

The following is submitted by NLCAA to meet the requirements of § 10-103-A (c) G.

NLCAA will issue the Acceptance Test Technician a unique identification number starting with the prefix ATT followed by 4 digits representing the year and month and ending with a 5 digit number representing that months' graduates.

Sample ATT-1405-00002

(Where) 14 indicate(s) the year and 05 indicates the month (and) 00002 was the second student certified that month.

The NLCAA website has postings for both the contractors, (acceptance test technician employers), and acceptance test technicians. The posting will also indicate if they are eligible to perform testing, list any complaints filed, and show certification or suspension status.

Additionally:

Acceptance Test Technician Employers may be identified in the NLCAA database by name, contact information and date of original certification.

NLCAA will issue the Acceptance Test Technician Employer a unique identification number starting with the prefix ETT followed by 6 digits representing the order in which ATT Employers were certified.

ETT-000000

NLCAA shall provide verification of current ATT certification status upon request to authorized document Registration Provider or enforcement agency personnel …

"… costs commensurate with the complexity …"

A fee of $200.^{00}$ will be assessed prior to the use of NLCAA Acceptance Testing Data Entry Software for a single building permit issued for a building site where certified technicians are completing acceptance tests.

§ 10-103-A (d) **Requirements for ATTCPs to Provide Annual Reports.**

NLCAA shall provide an annual report to the Energy Commission quantifying the following information:

1) Total number of Acceptance Test Technicians certified during the reporting period;

2) Total number of Acceptance Test Technician Employers certified during the reporting period;

3) Total number of Acceptance Test Technicians certified since July 1st, 2014;

4) Total number of Acceptance Test Technician Employers certified since July 1st, 2014;

5) Total number of Acceptance Test Technicians currently under certification by NLCAA;

6) Total number of Acceptance Test Technician Employers currently under certification by NLCAA;

7) Total number of Acceptance Test Technicians with certifications revoked during the reporting period;

8) Total number of Acceptance Test Technician Employers with certifications revoked during the reporting period;

9) Total number of Acceptance Test Technicians with certifications surrendered during the reporting period;

10) Total number of Acceptance Test Technician Employers with certifications surrendered during the reporting period;

11) Total number of Acceptance Test Technicians with certifications under suspension on last day of the reporting period;

12) Total number of Acceptance Test Technician Employers with certifications under suspension on last day of the reporting period;

Additionally, summaries of adjustments to training curricula will be reported when required to:

1) Address changes to lighting technology and controls currently found in the field;

2) Address changes to the Building Energy Efficiency Standards Acceptance testing requirements;

3) Address updates to the Building Energy Efficiency Standards;

Additional reports to the California Energy Commission shall be submitted, as required, to demonstrate that adjustments to training are reflective of the requirements noted above and are being introduced, (when practical), no less than 6 months prior to the adoption of changes to the Building Energy Efficiency Standards.

Required annual reports shall be transmitted to the California Energy Commission within 30 days of the end of the reporting period. All required reports shall contain a signed certification that NLCAA has met all requirements for this program.

Summary - § 10-103-A (c)

The National Lighting Contractors Association of America, (NLCAA), shall be the organization certifying Lighting Controls Acceptance Test Technicians and Employers of same.

Independent oversight of this process shall be provided by the training consultant of California Electrical Training.

Reasonable Access to the course material is shown by the methods of dissemination shown on page 5 of this document. Hands-on training, (§ 10-103-A (c) 3. B. (ii)) will be required for the training of Field Technicians.

Prequalification procedures for both Field Technicians and Employers are detailed in this document.

Oversight of the certification processes and procedures will be accomplished through:

The Audit Procedure;

The Complaint Procedure;

Form Reviews;

Field Inspections and Random Field Inspections;

Building Department Surveys.

The ability of NLCAA to suspend or revoke certification of Field Technicians and Employers is detailed in this document.

Requirements for additional training and recertification procedures are detailed in this document.

The ability of NLCAA to reduce or waive fees for training and other services appears in this document.

The ability to provide certification identification numbers and verification of certification to the California Energy Commission is outlined in this document. The ability to provide acceptance testing forms and data to authorized parties, (along with Complaint Procedures and Building Department Surveys), is described in this document.

NLCAA shall provide annual reports containing, (at a minimum), the information outlined in § 10-103-A (d).

June 25, 2014

Signature Page

Rob Pleroth

Rob Pleroth, Director

Richard D. Des Lauriers, Director

Gary Collier, Director

Jack Yapp, Director

Jack Yapp

Secretary

National Lighting Contractors Association of America

NLCAA LIGHTING ATTCP APPLICATION

BYLAWS

OF

NATIONAL LIGHTING CONTRACTORS ASSOCIATION OF AMERICA

ARTICLE 1-OFFICES

SECTION 1. PRINCIPAL OFFICE

The principal office of the corporation for the transaction of its business is located at 3301 E. Hill Street Suite 408 Signal Hill in Los Angeles County, California.

SECTION 2. CHANGE OF ADDRESS

The county of the corporation's principal office can be changed only by amendment of these Bylaws and not otherwise. The Board of Directors may, however, change the principal office from one location to another within the named county by noting the changed address and effective date below, and such changes of address shall not be deemed an amendment of these Bylaws:

SECTION 3. OTHER OFFICES

The corporation may also have offices at such other places, within or without the State of California, where it is qualified to do business, as its business may require and as the board of directors may, from time to time, designate.

ARTICLE II - PURPOSE

SECTION 1. OBJECTIVES AND PURPOSES

The primary objectives and purposes of this corporation shall be:

a) Provide training and education to State, Counties, Cities, and their municipalities regarding required energy efficient lighting and control systems.
b) Provide training and education to its members.
c) Promote energy efficient lighting and controls systems.

NLCAA LIGHTING ATTCP APPLICATION

ARTICLE III - DIRECTORS

SECTION 1. NUMBER

The corporation shall have three directors and collectively they shall be known as the Board of Directors. The number may be changed by amendment of this Bylaw, or by repeal of this Bylaw and adoption of a new Bylaw, as provided in these Bylaws.

SECTION 2. POWER

Subject to the provisions of the California Nonprofit Public Benefit Corporation law and any limitations in the Articles of Incorporation and Bylaws relating to action required or permitted to be taken or approved by the members, if any, of this corporation, the activities and affairs of this corporation shall be conducted and all corporate powers shall be exercised by or under the direction of the Board of Directors.

SECTION 3. DUTIES

It shall be the duty of the directors to:

a) Perform any and all duties imposed on them collectively or individually by law, by the Articles of Incorporation of this corporation, or by these Bylaws;
b) Appoint and remove, employ and discharge, and, except as otherwise provided in these Bylaws, prescribe the duties and fix the compensation, if any, of all officers, agents and employees of the corporation;
c) Supervise all officers, agents and employees of the corporation to assure that their duties are performed properly;
d) Meet at such times and places as required by these Bylaws;
e) Register valid email and physical addresses with the Secretary of the corporation for all official corporate correspondence.

SECTION 4. TERMS OF OFFICE

Each director shall hold office until the next annual meeting for election of the Board of Directors as specified in these Bylaws, and until his or her qualified successor is elected.

SECTION 5. COMPENSATION

Directors shall serve without compensation. In addition, they shall be allowed reasonable advancement or reimbursement of expenses incurred in the performance of their regular duties as specified in Section 3 of this Article. Directors may not be compensated for rendering

services to the corporation in any capacity other than director unless such other compensation is reasonable and is allowable under the provisions of Section 3 of this Article

SECTION 6. PLACE OF MEETINGS

Meetings shall be held at the principal office of the corporation unless otherwise provided by the board or at such place within or without the State of California which has been designated from time to time by resolution of the Board of Directors. In the absence of such designation, any meeting not held at the principal office of the corporation shall be valid only if held on the written consent of all directors given either before or after the meeting and filed with the Secretary of the corporation or after all board members have been given written notice of the meeting as hereinafter provided for special meetings of the board. Any meeting, regular or special, may be held by conference telephone or similar communications equipment, so as long as all directors participating in such meeting can hear one another.

SECTION 7. REGULAR AND ANNUAL MEETINGS

Regular meetings of the Directors shall be held annually on the third Saturday of August at 10:00 AM.

At the annual meeting held on the third Saturday of August, directors shall be elected by the Board of Directors in accordance with this section. Cumulative voting by directors for the election of directors shall not be permitted. The candidates receiving the highest number of votes up to the number of directors to be elected shall be elected. Each director shall cast one vote, with voting being by ballot only.

SECTION 8. SPECIAL MEETING

Special meetings of the Board of Directors may be called by the Chairperson of the board, the President, the Vice President, the Secretary, or by any two directors, and such meetings shall be held at the place, within or without the State of California, designated by the person or persons calling the meeting, and in the absence of such designation, at the principal office of the corporation.

SECTION 9. NOTICE OF MEETINGS

Regular meetings of the board may be held without notice. Special meetings of the board shall be held upon four (4) days' notice by first-class mail or forty-eight (48) hours' notice delivered personally or by telephone or email. If sent by mail or email, the notice shall be deemed to be delivered on its deposit in the mails or on its delivery to the email company. Such notices shall

be addressed to each director at his or her address as shown on the books of the corporation. Notice of the time and place of holding an adjourned meeting need not be given to absent directors if the time and place of the adjourned meeting are fixed at the meeting adjourned and if such adjourned meeting is held no more twenty-four (24) hours from the time of the original meeting. Notice shall be given of any adjourned regular or special meeting to directors absent from the original meeting if the adjourned meeting is held more than twenty-four (24) hours from the time of the original meeting.

SECTION 10. CONTENTS OF NOTICE

Notice of meetings not herein dispensed with shall specify the place, day and hour of the meeting. The purpose of any board meeting need not be specified in the notice.

SECTION 11. WAIVER OF NOTICE AND CONSENT TO HOLDING MEETINGS

The transactions of any meeting of the board, however called and noticed or wherever held, are as valid as though the meeting had been duly held after proper call and notice, provided a quorum, as hereinafter defined, is present and provided that either before or after the meeting each director not present signs a waiver of notice, a consent to holding the meeting, or an approval of the minutes thereof. All such waiver, consents, or approvals shall be filed with the corporate records or made a part of the minutes of the meeting.

SECTION 12. QUORUM FOR MEETINGS

A quorum shall consist of Two Directors.

WRITTEN CONSENT OF DIRECTORS ADOPTING BYLAWS

We, the undersigned, are all of the persons named as the initial directors in the Articles of Incorporation of NATIONAL LIGHTING CONTRACTORS ASSOCIATION OF AMERICA, a California nonprofit corporation, and, pursuant to the authority granted to the directors by these Bylaws to take action by unanimous written consent without a meeting, consent to, and hereby do, adopt the foregoing Bylaws, consisting of four pages, as the Bylaws of this corporation.

Dated:_____

Temistocles Caal, Director Gary Collier Director Jack Yapp CEO

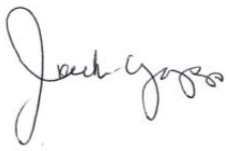
Rob Pieroth, Director Rick Des Lauriers Director

NLCAA LIGHTING ATTCP APPLICATION

CERTIFICATE

This is to certify that the foregoing is a true and correct copy of the Bylaws of the corporation named in the title thereto and that such Bylaws were duly adopted by the Board of Directors of said corporation on the date set forth below.

Dated 7-6-13



Jack Yapp, Secretary

Lighting Controls Acceptance Test Technician Class Outline

Introduction

- Why advanced lighting and Title 24?
- Quality and Complaint Policies and Procedures
- Acceptance Test Technician

Modern Lighting Technologies

- Past Technologies
- Luminance and Illuminance
- Units of Interest
  - Lumen Output
  - Footcandles and Lux
  - Absolute vs. Relative Illuminance Measurement
    - Proper Use of Lightmeters
    - Lightmeter Types
- IES Lighting Levels and Title 24
- Lamp Types Review
  - Incandescent
  - Fluorescent
  - Induction
  - HID
  - LED
- Lamp Specifications
  - Correlated Color Temperature
  - Color Rendering
  - Lamp Markings
  - DOE Information Labels
- Ballasts and Drivers
  - Fluorescent Ballasts: BF and BEF
  - Starting Fluorescents and HID
  - Magnetic and Electronic Ballasts: Crest Factor
  - Fluorescent Dimming
  - LED Drivers: Dimming

Controlling Luminaires

- 0-10V Dimming Ballasts and Drivers
- Digital Dimming Ballasts and Drivers
  - Installing and Testing
    - Wiring Techniques
    - Heat Dissipation
    - Grounding
    - Initial Testing

Lighting Controls

- **Area Controls and 130.1 (a)**
- **Switching Schemes**
  - **Line Voltage**
  - **Low Voltage**
  - **Relays, Power Packs, Power Pack Logic Functions**
  - **Shut-OFF Controls and 130.1 (b)**
    - **Automatic Time Switches**
    - **Occupancy sensors**
      - **Technologies and Applications**
- **Dimming Controls and 130.1 (c)**
  - **Phase Dimmers**
  - **0-10V and Digital Controls**
  - **Zones, Groups, and Scenes**
- **Daylight Harvesting and 130.1 (d)**
  - **Photosensors vs. Photo-controllers**
  - **Open and Closed Loop Systems Introduction**
- **Automated Demand Response and 130.1 (e)**
  - **The Demand Response Signal**
- **Title 20 and Lighting Systems**
  - **Lighting Systems**
  - **Large Lighting Systems**

Working with Lighting Controls

- **Safety**
- **Avoiding Equipment Damage**
- **Test Equipment Types and Use**
  - **Test Equipment Ratings**
  - **Test Equipment Safety**
- **Lock-out/Tag-out and PPE**
- **Avoiding "Deprogramming" Controls**

Reference Documents

- **Contents of the 4 Reference Documents**
- **Where to find the Reference Documents**
- **Insuring you have the most recent revisions**
- **2013 Building Energy Efficiency Standards**
  - **Definitions, Compliance Process, Design, Mandatory Controls, Acceptance**
- **2013 Reference Appendices**
  - **Acceptance Tests, Installation Tests**
- **2012 Appliance Efficiency Regulations**
  - **Functional Requirements of Lighting Controls**
  - **Insuring devices have been Certified to the Energy Commission**
- **2013 Nonresidential Compliance Manual**
  - **Acceptance Forms, Compliance Forms, Installation Forms**

Introductory Subjects
- The Percent Reduction Formula
- Percentages

Compliance Process
- The Compliance Process
- Examination of Forms
  - Compliance Forms
  - Installation Forms
  - Acceptance Forms
- Definitions

Title 24 Controls
- Where Required and Exceptions
- Lighting Power Density
  - Design methods
    - Prescriptive methods
    - Performance method
      - Trade-offs
- Interlocked Lighting Systems

Area Controls
- Where Required and Exceptions

Multi-Level Controls
- Minimum Control Steps by Technology and Wattage
- Uniformity Requirements by Technology and Wattage
- Where Required and Exceptions
  - Dimming Controls

Acceptance Testing Overview
- Purpose of Acceptance Testing
- When Required
- Construction Inspections
- Functional Testing
- Acceptance Forms

Shut-OFF Controls
- Introduction: Timers and Occupancy sensors
- Power Adjustment Factors (PAF)
  - Calculating and Verifying
  - Acceptance Testing

Timers
- Automatic Time-Switches
- Astronomical Time-Switch
  - Where Realized by an EMCS or Lighting Control System

Occupancy Sensors
- **Part-OFF**
  - **Why Required**
- **Part-ON**
  - **Why Utilized**
- **Where Required**
- **Vacancy Sensors**
  - **Where Realized by an EMCS or Lighting Control System**

Shut-OFF Controls Acceptance Procedures
- **Acceptance tests**
  - **Filling Out NRCA-LTI-02-A**
- **Review: Where Required**

Automatic Daylighting Controllers
- **Review of Closed-Loop Lighting Systems**
- **Introduction**
- **Overview of Common Daylighting Systems**
- **Definitions**
- **Daylit Zones**
  - **Definitions**
  - **Order of Precedence**
  - **Location of Daylit Zones on Plans**
- **Fixtures Located in Daylit Zones**
- **Zones Illuminated by Controlled Luminaires**
- **Acceptance Testing**
  - **Construction Inspection**
  - **EMCS or Lighting Control System Installation Inspections**
  - **Stepped or Continuously Dimmed System?**
  - **Photosensor Location and System Type: (Open or Closed) Loop?**
  - **Review of Open and Closed Loop Daylighting Systems**
- **Reference Location**
  - **Locating**
  - **Special Case: Parking Garages**

- **Acceptance Testing of Automatic Daylighting Systems**
  - **Functional Testing**
    - **Closed-Loop Systems**
      - **No Daylight Test**
      - **Full Output Test**
      - **Full Daylight Test**
        - **Power Reduction Calculation**
      - **Partial Daylight Test**
    - **Open-Loop Systems**
      - **No Daylight Test**
      - **Sensor Ratio**
      - **Full Daylight Test**
        - **Power Reduction Calculation (Stepped)**
        - **Power Reduction Calculation (Continuous)**
      - **Partial Daylight Test**
        - **Continuous**
        - **Stepped**

Outdoor Lighting Controls

- **Types of Outdoor Lighting Controls**
- **Where Required and Exceptions**
- **Part-Night Controls: Definition**
- **Part-Night Controls: Extended Definition per §110.9 (b) 5.**
- **Acceptance Testing**
  - **Construction Testing**
  - **Location of Outdoor Controls**
  - **Functional Testing**
    - **Motion**
    - **No Motion**
  - **Shut-OFF Controls**
  - **Timers**
  - **Part-Night Timers**
  - **Part-Night Motion or Time-Based System**

Demand Responsive Controls

- **Where Required and Exceptions**
- **Area Weighted Average**
- **Acceptance Testing**
  - **Full Output Test**
  - **Minimum Output Test**
- **Special Case: Daylit Spaces**

Summary

- **Who Signs the Forms?**

NLCAA Acceptance Test Technician Employer Class Outline

Introduction

- Why advanced lighting and Title 24?
- Quality and Complaint Policies and Procedures
- Form Reviews and Field Inspections
- Acceptance Test Technician Employer

Reference Documents

- Contents of the 4 Reference Documents
- Insuring you have the most recent revisions
- Where to find the Reference Documents
- 2013 Building Energy Efficiency Standards
  - Definitions, Compliance Process, Design, Mandatory Controls, Acceptance
- 2013 Reference Appendices
  - Acceptance Tests, Installation Tests
- 2012 Appliance Efficiency Regulations
  - Functional Requirements of Lighting Controls
  - Insuring devices have been Certified to the Energy Commission
- 2013 Nonresidential Compliance Manual
  - Acceptance Forms, Compliance Forms, Installation Forms

Introductory Subjects

- The Percent Reduction Formula
- Percentages

Compliance Process

- The Compliance Process
- Examination of Forms
  - Compliance Forms
  - Installation Forms
  - Acceptance Forms
- Definitions

Title 24 Controls

- Where Required and Exceptions
- Lighting Power Density
  - Design methods
    - Prescriptive methods
    - Performance method
      - Trade-offs
- Interlocked Lighting Systems

Area Controls

- Where Required and Exceptions

Multi-Level Controls

- Minimum Control Steps by Technology and Wattage
- Uniformity Requirements by Technology and Wattage
- Where Required and Exceptions
  - Dimming Controls

Shut-OFF Controls

- Introduction: Timers and Occupancy sensors
- Power Adjustment Factors (PAF)
  - Calculating and Verifying
  - Acceptance Testing

Acceptance Testing Overview

- Purpose of Acceptance Testing
- When Required
- Acceptance Forms

Timers

- Automatic Time-Switches
- Astronomical Time-Switch

Occupancy Sensors

- Part-OFF
- Part-ON
- Where Required
- Vacancy Sensors

Shut-OFF Controls Acceptance Procedures

- Review: Where Required

Automatic Daylighting Controllers

- Overview
- Definitions
- Daylit Zones
  - Definitions
  - Order of Precedence
  - Location of Daylit Zones on Plans
- Fixtures Located in Daylit Zones
- Zones Illuminated by Controlled Luminaires
- Reference Location
  - Special Case: Parking Garages
- Acceptance Testing
  - Construction Inspection
  - Review of Open and Closed Loop Daylighting Systems
  - Review of Open and Closed Loop Sensor Locations

NLCAA AUDIT FORM

1 - IDENTIFY THE PROJECT:

In-House Name of Project: _____

In-House Project and/or Work-Order Number(s): _____

Location of Project: _____

Project Identifying Numbers or Names from Plans or Building Permit: _____

2 - IDENTIFY THE ACCEPTANCE TEST PERSONNEL:

Name of Responsible Person(s): _____Certification #: _____

Name of Responsible Person(s): _____Certification #: _____

Name of Responsible Person(s): _____Certification #: _____

Name of Documentation Authors(s): _____

Name of Documentation Authors(s): _____

Name of Documentation Authors(s): _____

Name of Field Technician(s): _____Certification #: _____

Name of Field Technician(s): _____Certification #: _____

Name of Field Technician(s): _____Certification #: _____

Name of Field Technician(s): _____Certification #: _____

Name of Field Technician(s): _____Certification #: _____

NLCAA AUDIT FORM – Page 2

3 - IDENTIFY YOURSELF:

Business Name and Location:_____

_____

Name(s) of Person(s) Filling Out *THIS* Form: _____,_____

_____,_____,_____,_____

Principle *Responsible Person* Verifying *THIS* Form is Complete and Accurate (per 10-103(a) 4., JA7.4.6):

_____Job Description_____

Cell Phone: _____ _____ Other Phone: _____ _____

E-mail: _____

Was/Were Acceptance the Test Technician(s): Your Employee? ◯, or Contract Personnel ◯

If Field Technician was Contract Personnel, Please Identify Their Employer:

_____

_____

Are *YOU*: the General Contractor ◯, the Electrical Contractor ◯, the Lighting Contractor ◯,
The Lighting Designer ◯, the System Integrator ◯, the Building Designer ◯, or;
Other?: ◯, if "Other", Please describe: _____

NLCAA AUDIT FORM – Page 3

4 - THIS AUDIT FORM IS BEING COMPLETED BECAUSE:

It is an Acceptance Test Technicians' First Job:	Yes ◯	No ◯
A Field Technician Has Had more Than 10 Jobs in 30 Days:	Yes ◯	No ◯
It Has Been More Than 3-Years Since a Technicians' Last Audit:	Yes ◯	No ◯
The FINAL Inspection Has Failed on This Job:	Yes ◯	No ◯
NLCAA has Prescribed This Audit Due to a Complaint:	Yes ◯	No ◯
NLCAA has Prescribed This Audit for Other Reasons:	Yes ◯	No ◯
Other: _____	Yes ◯	No ◯

I Don't Know … ◯

5 – THE SITE UNDERGOING ACCEPTANCE TESTING:

A) Required Testing of INDOOR Lighting Controls ONLY:	Yes ◯	No ◯
B) Required Testing of OUTDOOR Lighting Controls ONLY:	Yes ◯	No ◯
C) Required *Both* INDOOR and OUTDOOR Controls Testing:	Yes ◯	No ◯

If "A)" is "Yes" Continue – Skip Sections: 12, 13, and 14

If "B)" is "Yes" Skip to Section: 12

If "C)" is "Yes" Continue …

6 – INDOOR SHUT-OFF CONTROLS:

Did the Building Have One or More Automatic Timers

Controlling Lighted Areas? :	Yes ◯	No ◯	I Don't Know ◯

If "No" Skip the Remainder of This Section …

If "Yes" Answer the Following Questions …

Was/were the Timer(s) set to ON Condition to Test?	Yes ◯	No ◯	I Don't Know ◯
Were the Effected Area Controls Active in ON Condition:	Yes ◯	No ◯	I Don't Know ◯
Was/were the Timer(s) set to OFF Condition to Test?	Yes ◯	No ◯	I Don't Know ◯
Were the Effected Area Controls Deactivated in Timer OFF Condition:			
	Yes ◯	No ◯	I Don't Know ◯
Was the Local Override Tested for these Area Controls?:	Yes ◯	No ◯	I Don't Know ◯
Was The Timer Override Time-out Correct?	Yes ◯	No ◯	I Don't Know ◯
Was the Timer Program Restored to Original Settings?	Yes ◯	No ◯	I Don't Know ◯

NLCAA AUDIT FORM – Page 4

7 - OCCUPANT SENSING DEVICES - THE SITE UNDERGOING ACCEPTANCE TESTING …

Contained Occupancy Sensors? Yes ◯ No ◯ I Don't Know ◯

If "No" Skip This Section

Did All Occupancy Sensors Tested Function Correctly? Yes ◯ No ◯ I Don't Know ◯

If "No", Were the Defective Sensors Corrected? Yes ◯ No ◯ I Don't Know ◯

Were All Tested Sensors Positioned Properly? Yes ◯ No ◯ I Don't Know ◯

If "No", Were the Improper Sensors Corrected? Yes ◯ No ◯ I Don't Know ◯

Was the Maximum Time-out Checked on All Tested Sensors?

Yes ◯ No ◯ I Don't Know ◯

Was the Maximum Time-out on Tested Sensors Between

35 Minutes and 45 Minutes? Yes ◯ No ◯ I Don't Know ◯

On the First Occupant Sensing Device Listed as Being Tested – The "visible status indicator"

Required by: 1605.3 (L) (2) (G) :

Was Present and Functioning: Yes ◯ No ◯ I Don't Know ◯

Was Present but Disabled: Yes ◯ No ◯ I Don't Know ◯

Was Absent: Yes ◯ No ◯ I Don't Know ◯

On the First Occupant Sensing Device Listed as Being Tested – Was There a Manual Switch Allowing All Lights to Be Manually Turned Off?

Yes ◯ No ◯ I Don't Know ◯

8 – MULTI-LEVEL CONTROLS:

Did the Building Have One or More Multi-Level Controls Installed in

Controlling Lighted Areas? : Yes ◯ No ◯ I Don't Know ◯

If "No" Skip the Remainder of This Section …

If "Yes" Answer the Following Questions for *Any* System or Area YOU Select, NOT Containing Track Lighting Providing General Lighting as Defined in Section 100.1 …

Was The General Lighting Provided by a Continuously Dimmed System?

Yes ◯ No ◯ I Don't Know ◯

If "Yes" Skip the Remainder of This Section …

If "No" Answer the Following Questions:

Were Individual *LUMINAIRES* Switched to Provide Multi-level Control?

Yes ◯ No ◯ I Don't Know ◯

Were Individual *LAMPS* in *LUMINAIRES* Switched to Provide Multi-level Control?

Yes ◯ No ◯ I Don't Know ◯

NLCAA AUDIT FORM – Page 5

9 - AUTOMATIC DAYLIGHTING SYSTEMS - THE SITE UNDERGOING ACCEPTANCE TESTING …

Contained Daylighting System(s)? Yes ◯ No ◯ I Don't Know ◯

If "No" Skip This Section

Did All "Photosensors" Tested Function Correctly? Yes ◯ No ◯ I Don't Know ◯

If "No", Were the Defective Sensors Corrected? Yes ◯ No ◯ I Don't Know ◯

Were All Tested Photosensors Positioned Properly? Yes ◯ No ◯ I Don't Know ◯

If "No", Were the Improper Sensors Corrected? Yes ◯ No ◯ I Don't Know ◯

Identify An Automatic Daylighting System of your choice; Answer the Following Questions:

☐_____

Is the Area Served by a Continuously Dimmed System? Yes ◯ No ◯ I Don't Know ◯

If "No", Skip to the Next Section, Otherwise Answer the Following Questions:

Is the Area Open or Closed Loop Controlled? Open-Loop ◯ Closed-Loop ◯ I Don't Know ◯

If "Open-Loop", Answer the "**OPEN-LOOP: Question**", Also Answer the Following Questions:

Was a "Design Illumination" Value Found for this Area? Yes ◯ No ◯ I Don't Know ◯

Was the "Reference Illumination" Measured? Yes ◯ No ◯ I Don't Know ◯

If "Yes"; What was its Value in Foot-Candles? _____ fc n/a ◯ I Don't Know ◯

If "No"; What was the Reference Power Draw? _____ VA or W n/a ◯ I don't Know ◯

The Power Reduction From "No Daylight (Full Output)" to "Full Daylight" Conditions was:
_____ %; or I Don't Know ◯

Did this System Pass the "Partial Daylight" Test? Yes ◯ No ◯ I Don't Know ◯

How was the "No Daylight" Power/Illumination Determined?

Covered Fenestration - ◯

Tested at Night - ◯

Adjusted Setpoints Locally - ◯

System Integrator Adjusted Setpoints - ◯

I Don't Know **or** Other Method - ◯

OPEN LOOP: Question:

How was the "Full Daylight" Test Accomplished?

Sensor Ratio - ◯

Tested in Full daylight - ◯

Adjusted Setpoints Locally - ◯

System Integrator Adjusted Setpoints - ◯

I Don't Know - ◯

NLCAA AUDIT FORM – Page 6

10 - AUTOMATIC DAYLIGHTING SYSTEMS - THE SITE UNDERGOING ACCEPTANCE TESTING …

Contained a Stepped Dimming/Switching Daylighting System(s)?

Yes ◯ No ◯ I Don't Know

If "No" Skip This Section …

Answer the Following Questions:

Is the Area Open or Closed Loop Controlled? Open-Loop ◯ Closed-Loop ◯ I Don't Know ◯

If "Open-Loop", Answer the "**OPEN-LOOP: Question**", Also Answer the Following Questions:

Was a "Design Illumination" Value Found for this Area? Yes ◯ No ◯ I Don't Know ◯

Was the "Reference Illumination" Measured? Yes ◯ No ◯ I Don't Know ◯

If "Yes"; What was its Value in Foot-Candles? _____ fc n/a ◯ I Don't Know ◯

If "n/a"; What was the Reference power Draw? _____ VA or W n/a ◯ I don't Know ◯

The Power Reduction From "No Daylight" to "Full Daylight" Conditions was:
_____% ; or I Don't Know ◯

Did this System Pass the "Partial Daylight" Test? Yes ◯ No ◯ I Don't Know ◯

How was the "No Daylight" Power/Illumination Determined?

Covered Fenestration - ◯

Covered Sensor - ◯

Tested at Night - ◯

Adjusted Setpoints Locally - ◯

System Integrator Adjusted Setpoints - ◯

I Don't Know **or** Other Method - ◯

How Many Steps Were Tested During the "Partial Daylight" Test: _____ I Don't Know ◯

If Less Than 3 Steps; Did the Area Contain Track Lighting? Yes ◯ No ◯ I Don't Know ◯

Did the Area Contain Less Than .3Watts/ft² of LPD? Yes ◯ No ◯ I Don't Know ◯

If "Yes", How do You Know This? _____

Was the Area a Classroom? Yes ◯ No ◯ I Don't Know ◯

OPEN LOOP: Question:

How was the "Full Daylight" Test Accomplished?

Sensor Ratio - ◯

Tested in Full daylight - ◯

Adjusted Setpoints Locally - ◯

System Integrator Adjusted Setpoints - ◯

I Don't Know - ◯

Other Method: _____ ◯

NLCAA AUDIT FORM – Page 7

11 – AUTOMATIC DEMAND RESPONSE SYSTEM(S):

Did the Project Under Test Contain Automatic Demand Response Equipment(s)?

Yes ◯ No ◯ I Don't Know ◯

If "No" Skip This Section …

For the Largest Demand Response Controlled Area, (by Floor Area Square Footage),

Answer the Following Questions:

What was the Area (in ft^2) of the Space in Question? _____(ft^2) I Don't Know ◯

Is the Area in a Daylit Space? Yes ◯ No ◯ I Don't Know ◯

DURING THE FULL OUTPUT TEST:

What was the Full Output Illuminance Prior to Demand Response Testing?

_____ fc or, I Don't Know ◯

What was the Full Output Power Draw Prior to Demand Response Testing?

_____ V-A or W or, I Don't Know ◯

What was the Full Output Illuminance After Initiating Demand Response Testing?

_____ fc or, I Don't Know ◯

What was the Full Output Power Draw After Initiating Demand Response Testing?

_____ V-A or W or, I Don't Know ◯

Was the "Daylight Illumination" Measured? Yes ◯ No ◯ I Don't Know ◯

If "Yes"; What was its Value in Foot-Candles? _____ fc n/a ◯ I Don't Know ◯

What was Your Calculated Percent Power Reduction for This Area _____ %

DURING THE MINIMUM OUTPUT TEST:

What was the Minimum Output Illuminance Prior to Demand Response Testing?

_____ fc or, I Don't Know ◯

What was the Minimum Output Power Draw Prior to Demand Response Testing?

_____ V-A or W or, I Don't Know ◯

What was the Minimum Output Illuminance After Initiating Demand Response Testing?

_____ fc or, I Don't Know ◯

What was the Minimum Output Power Draw After Initiating Demand Response Testing?

_____ V-A or W or, I Don't Know ◯

What was the Percentage of Full Design Output Power for This Area After Initiating a Demand Response Test for the Minimum Output Test?

_____ %

NLCAA AUDIT FORM – Page 8

12 – OUTDOOR SHUT-OFF CONTROLS - THE SITE UNDERGOING ACCEPTANCE TESTING …

Contained One or More Automatic Time Switches for Outdoor Shut-OFF Control?
Yes ◯ No ◯ I Don't Know ◯

If "No" Skip This Section …

Answer the Following Questions:

Was the Timer an Astronomical Time Switch? Yes ◯ No ◯ I Don't Know ◯

If Yes; Were the ON and OFF Times Programmed for Within 99 Minutes of Sunrise and Sunset?
Yes ◯ No ◯ I Don't Know ◯

If Yes; How was This Determined? Examined Programming ◯
Observed Controlled Lighting ◯
Consulted with System Integrator ◯
Other Method: _____ ◯

Was a Timer Present for Night-Time Shut-OFF? Yes ◯ No ◯ I Don't Know ◯

Was the Controlled Lighting OFF During Daylight Hours?
Yes ◯ No ◯ I Don't Know ◯

13 – OUTDOOR SHUT-OFF CONTROLS - THE SITE UNDERGOING ACCEPTANCE TESTING …

Contained One or More Photocontrols for Outdoor Shut-OFF Control?
Yes ◯ No ◯ I Don't Know ◯

If "No" Skip This Section …

Answer the Following Questions:

Did Compliance Form: CEC-NRCC-LTO-02-E Indicate that any "self-contained lighting control devices" are "certified to the Energy Commission"? Yes ◯ No ◯ I Don't Know ◯

If No; Did Compliance Form: CEC-NRCC-LTO-02-E Indicate That an Installation Certificate was Submitted for a Lighting Control system or Energy Management Control System for Outdoor Lighting?
Yes ◯ No ◯ I Don't Know ◯

If Yes; Did Installation Form: CEC-NRCI-LTO-02-E Indicate That the Lighting Control system or Energy Management Control System for Outdoor Lighting "meets all applicable requirements for (the/each) application for which (it/they) are installed"?
Yes ◯ No ◯ I Don't Know ◯

Was the Controlled Lighting OFF During Daylight Hours?
Yes ◯ No ◯ I Don't Know ◯

NLCAA AUDIT FORM – Page 9

14 – OUTDOOR SHUT-OFF CONTROLS - THE SITE UNDERGOING ACCEPTANCE TESTING …

… Contained One or More Motion Sensors for Outdoor Shut-OFF or Part-Night Control?

Yes ◯ No ◯ I Don't Know ◯

If "No" Skip This Section …

Answer the Following Questions:

Were ALL Motion Sensors Tested Yes ◯ No ◯ I Don't Know ◯

15 – DATE THIS FORM WAS COMPLETED:

_____ / _____ / _____

(mm) (dd) (yyyy)

16 – Lighting Controls Acceptance Test Technician and Employer Who Prepared This Form:

Employer _____ certification # _____

Field Technician _____ certification # _____

ACCEPTANCE TEST TECHNICIAN EMPLOYER Audit Procedure

A Test Technician Employer is required to audit a Test Technician's work when:

1) It is the Acceptance Test Technician's first job after their certification, (or recertification), as a Field Technician, or;

2) The Acceptance Test Technician has performed 10 or more Acceptance Testing jobs within the last 30 calendar-days, or;

3) The Acceptance Test Technician has not had his or her work audited within the last 3 years, or;

4) When directed by NLCAA or their agents for any reason.

The audit process shall consist of:

1) The Field Technicians Employer shall accompany the Field Technician on their next Acceptance Testing job and review the Acceptance Testing Forms submitted; or review the Acceptance Testing Forms submitted by the Field Technician on his or her most previous Acceptance Testing job; and complete and transmit to NLCAA the required audit form, completed and "signed" by both Employer and Field Technician, within 90 calendar-days of notice to an Employer that an Audit Form Submission is required for the Field Technicians' next completed, (or most previous), job, when required based on the paragraph above.

2) NLCAA or their agents may, at their discretion, notify the Acceptance Test Technician Employer within 30 calendar-days of receipt of the audit form that a further inspection of the Acceptance Test Technician's work is required.

If the Acceptance Test Technician Employer is notified that a further inspection of an Acceptance Test Technician's work is required – the inspection process shall consist of a Field Inspection[1]:

1) The Acceptance Test Technician Employer shall arrange for NLCAA or their agents to accompany an Acceptance Test Technician of her or his choosing on their next real assignment and observe their actions as part of the Field Inspection Process.

Please note that monetary charges will be incurred for the Field Inspection.

In the event that the NLCAA required Field Inspection results are found to be unsatisfactory:

NLCAA shall submit to itself a complaint form concerning the individual(s) involved and the formal complaint process shall be set in motion by NLCAA.

NATIONAL LIGHTING CONTRACTORS ASSOCIATION OF AMERICA

COMPLAINT FORM

Complainant Information

Name: _____ Date:_____

Address: _____ Telephone No._____

E-Mail Address: _____

Location of work, if different:_____

Date, time and place of event leading to complaint:
Detailed account of occurrence (include names of persons involved, if any):
Please state building codes, procedures, or guidelines that you feel have been violated:
Proposed solution to complaint, if any:

The complainant should retain a copy of this form for his/her records. The signature below indicates that you are a filing a complaint and any information on this form is truthful.

_____ _____
Complainant Signature Date

_____ _____
Received by Date

National Lighting Contractors Association of America

Acceptance Test Technician and Acceptance Test Employer Complaint Procedure

Purpose and Objective

The purpose of this complaint procedure is to provide a mechanism for resolving disputes arising from the use and performance of National Lighting Contractors Association of America (NLCAA) Certified Lighting Controls Acceptance Test Technicians and/or their Employers.
It is recognized that issues may arise regarding the performance of lighting controls acceptance testing and this complaint procedure is intended to assist in addressing and resolving those complaints.

The objective of this complaint procedure is to make available to the public and building departments a process to facilitate a fair, impartial and expeditious dispute resolution. This procedure does not limit or infringe on any other rights the parties may have.

Definition

A complaint is a formal written notification of a problem or concern regarding an act, omission, situation or other behavior by a certified field technician or his/her employer.

Complaint Procedure

Step 1: Complete the Complaint Form - what happened or did not happen, name of individual(s) and company involved, dates events took place, location, and an explanation of issues.

Step2: Within 3 business days of receiving the complaint, a copy shall be sent to the Acceptance Test Technician and his/her employer. The Complaint shall be sent by e-mail, if

address is known, and by certified mail.

Step 3: Within 20 business days of receipt of the Complaint, the certified technician and certified technician's employer shall submit written responses addressing the concerns raised in the Complaint.

Step 4: Once responses are received, a committee of three (3) NLCAA Directors (at least one contractor representative and at least one instructor representative) shall review and evaluate the merits of the Complaint. The committee shall determine the extent of the infraction, if any, and appropriate disciplinary action. A summary of findings and recommendation of actions shall be sent, via certified mail, to the ATT, ATT Employer, and complainant within 20 business days.

Step 5: The ATT, ATT employer and complainant can either 1) accept the committee's findings and actions, or 2) file an appeal in writing. Any appeal to the NLCAA's actions shall be filed within 20 business days of receipt of the ruling.

Step 6: Within 15 business days of receiving the appeal, the NLCAA shall issue a final dispositive ruling on the matter, which shall be binding on all parties. The appeal review shall be performed by a single NLCAA director.

Post Hearing Matters

The NLCAA shall maintain records of the proceedings for six (6) years.

ACCEPTANCE TEST TECHNICIAN

Prequalification based on Military Experience, Certification, or Degree Earned

If applicants desiring prequalification have served in any of the ratings listed below, (in conjunction with other sufficient verifiable experience in lighting controls and electrical systems): They will be considered to be *Prequalified* to take NLCAA's course of instruction, (including preliminary online courses ł), to become eligible for state certification as a Lighting Controls Acceptance Test Technician.

With additional experience in "lighting controls and electrical systems", (10-103-A (c) 3. B. (iii)), persons in the following military ratings should have sufficient training to complete the NLCAA Lighting Controls Acceptance Test technician course.

U.S. NAVY -

ET*x*

FT*x*

ST*x*

IS(T)

CT*x*

EM*x*

Cyber Warfare Engineer

Where "*x*" is any string of alphanumeric or special characters

U.S. Coast Guard -

Avionics Electrical Technician

Electrician's Mate

Electronics Technician

Information Systems Technician

ł "Preliminary online courses" are: The Lighting Controls Association, [www.lightingcontrolsassociation.org]; "Education Express" courses - currently located at: [http//aboutlightingcontrols.org/education].

Courses EE-101; EE-102 §1,§2; EE-103 §1,§2; EE-105; EE-110; EE-201 (70% to Pass)

U.S. Marines -

Avionics

Aircraft Maintenance RADAR and/or Navigation and /or Weapons

Aircraft Communication Systems Technician

U.S. ARMY -

13M

14S

14T

25*x*

94*x*

Where "*x*"stands for any alphabetic character

U.S. Airforce

Aerospace Ground Equipment

Airborne (ISR)

Aircraft Electrical and Environmental Systems

Avionics Systems

Cable and Antenna Systems

Client Systems

Cybertransport Systems

Avionics Test and Components

Electronic Signals Intelligence Explorer

Ground RADAR Systems

Electrical Systems

Electrical Power Production

U.S. Airforce … Continued

Precision Measurement Equipment Laboratory

Radio Frequency Transmission Systems

Scientific Applications Specialist

Military Sealift Command

X Radio Electronics Technician

Where "*x*" is any string of alphanumeric or special characters or none

Additionally, persons holding the following Federal Certifications, (in conjunction with other verifiable experience in lighting controls), shall be granted prequalification to the NLCAA course of study for Lighting Controls Acceptance Test Technician upon completion of the required online prequalification courses ł:

FCC GROL (with or without Shipboard RADAR endorsement)

FAA Airman's Certificate

Additionally, persons holding the following State Certifications, (in conjunction with other sufficient verifiable experience in lighting controls), shall be granted prequalification to the NLCAA course of study for Lighting Controls Acceptance Test Technician upon completion of the required online prequalification courses ł:

Nonresidential Lighting Technician who has attended and successfully completed a State Approved School for the Whole Nonresidential Lighting Technician course of study

Acceptance Test Technician accreditation from an organization other than NLCAA

Additionally, persons holding the following Certifications, (in conjunction with other sufficient verifiable experience), shall be granted prequalification to the NLCAA course of study for Lighting Controls Acceptance Test Technician upon completion of the required online prequalification courses ł:

CALCTP (50-Hour) Advanced Lighting Course

ł "Preliminary online courses" are: The Lighting Controls Association, [www.lightingcontrolsassociation.org]; "Education Express" courses - currently located at: [http//aboutlightingcontrols.org/education].

Courses EE-101; EE-102 §1,§2; EE-103 §1,§2; EE-105; EE-110; EE-201 (70% to Pass)

Prequalification Based on Higher Education

Individuals possessing the *minimum* degrees in the following subjects, (in conjunction with other sufficient verifiable experience in lighting controls and electrical systems), will be considered prequalified for the NLCAA Lighting Controls Acceptance Test Technician course upon completion of the required online prequalification courses ł.

Bachelors of Science in Electrical Engineering

Bachelors of Science in Mechanical Engineering

Bachelors of Science in Chemical Engineering

Bachelors of Science in Physics

Bachelors of Science in Computer Science

Bachelors of Science in Chemistry

Bachelors of Science in Mathematics

Bachelors of Science in Geology/Geophysics

Masters of Science in Industrial Engineering

Masters of Science in Environmental Engineering

Masters of Science in Philosophy

ł "Preliminary online courses" are: The Lighting Controls Association, [www.lightingcontrolsassociation.org]; "Education Express" courses - currently located at: [http//aboutlightingcontrols.org/education].

Courses EE-101; EE-102 §1,§2; EE-103 §1,§2; EE-105; EE-110; EE-201 (70% to Pass)

ACCEPTANCE TEST TECHNICIAN Pre-qualification Warning Form

It is the opinion of the NLCAA director or agent having the privilege of examining the applicant listed below during the pre-qualification process that said applicant *might* not be able to complete the course of instruction for: Lighting Controls Acceptance Test Technician as defined by the 2013 Building Energy Efficiency Standards section 10-102.

Further, it is the opinion of the NLCAA director or agent having the privilege of examining the applicant listed below during the pre-qualification process that said applicant *might* not be able to fulfill the duties of a Lighting Controls Acceptance Test Technician as specified in the 2013 Building Energy Efficiency Standards section 130.4. (c). ŧ

NAME OF APPLICANT: _____

SIGNATURE OF NLCAA Director or Agent: _____

ŧ Any prior training or professional experience notwithstanding; any NLCAA Director or Agent shall not be considered a Medical Professional, Professional Counselor, or Practitioner in any field that might allow rendering a professional judgment. The opinion rendered above shall be considered a personal opinion, and will not reflect upon NLCAA as an organization. Said opinion shall be considered non-binding, and shall be rendered *null and void* upon said applicant named above signing an appeal form – the "Pre-qualification Appeal Form". Signing the "Pre-qualification Appeal Form" shall make the applicant named above immediately eligible to pay the required fees and engage in the training course for Acceptance Test Technician assuming all other aspects of the prequalification process are acceptable.

ACCEPTANCE TEST TECHNICIAN Pre-qualification Appeal Form

It is the opinion of the applicant signing below that she or he *will* be able to complete the course of instruction for: Lighting Controls Acceptance Test Technician as defined by the 2013 Building Energy Efficiency Standards section 10-102.

Further, it is the opinion of the applicant signing below that said applicant *will* be able to fulfill the duties of a Lighting Controls Acceptance Test Technician as specified in the 2013 Building Energy Efficiency Standards section 130.4. (c). ŧ

◯ I require a personal assistant to aid me in completing Lighting Controls Acceptance Testing:

I certify here that said personal assistant will *also* be certified as a Lighting Controls Acceptance Testing Technician through a state-approved Lighting Controls Acceptance Test Technician Provider and will be present to assist me during the course of Lighting Controls Acceptance Testing:

SIGNATURE OF APPLICANT (if applicable): _____

◯ I require a "reasonable accommodation" on a job-site to allow me to complete Lighting Controls Acceptance Testing:

I certify here that if, in my opinion, a jobsite will not be accessible to me – or will prove dangerous to me – I will decline the job:

SIGNATURE OF APPLICANT (if applicable): _____

◯ I disagree will the opinion of NLCAA or their agent(s) expressed on the "warning" form and feel competent to complete Lighting Controls Acceptance Testing:

SIGNATURE OF APPLICANT (required): _____

◯ I witness and accept this appeals form:

SIGNATURE OF NLCAA Director or Agent: _____

ŧ The applicants signature(s) on this form will render the "warning" form impotent and allow the collection of appropriate fees from the applicant and allow he or she to commence with the course of training assuming all other aspects of the prequalification process are acceptable.

Lighting Controls

ACCEPTANCE TEST TECHNICIAN EMPLOYER

Associate Contract

◯ I _____, acting as a director, agent, or proxy of NLCAA, (The National Lighting Contractors Association of America), do hereby pledge my support for the Lighting Controls Acceptance Test Technician Employer candidate named below; and do further certify that said individual has successfully completed all NLCAA prequalification criteria per ∮ 10-103-A (c): as determined by NLCAA.

NLCAA Director, or agent, or proxy initials _____

◯ I _____, as a candidate for NLCAA certification as a Lighting Controls Acceptance Test Technician Employer, do hereby agree to read and review the remainder of this contract.

Lighting Controls Acceptance Test Technician Employer candidate initials _____

◯ I _____, hereby acknowledge that I will not consider any charges for use of the NLCAA Acceptance Testing Data Entry Software as a "compelling reason" to not use, or to have a NLCAA Certified Lighting Controls Acceptance Test Technician under my supervision not use, the NLCAA Acceptance Testing Data Entry Software.

Lighting Controls Acceptance Test Technician Employer candidate initials _____

◯ I, as a candidate for NLCAA Lighting Controls Acceptance Test Technician Employer do hereby agree to the requirements and obligations to NLCAA and the State of California as detailed in the literature e-mailed to me upon applying for certification. I have read this information and/or viewed the online presentation: "Your Responsibilities as a Lighting Controls Acceptance Test Technician Employer".

I understand my obligations pertaining to:

◯ Audit Procedures ◯ Complaint Procedures ◯ Field Inspections ◯ Form Reviews

◯ Recertification ◯ Retraining

Lighting Controls Acceptance Test Technician Employer candidate initials _____

Certification Candidate _____ Date _____

Lighting Controls

ACCEPTANCE TEST TECHNICIAN

Associate Contract

◯ I _____, acting as a director, agent, or proxy of NLCAA, (The National Lighting Contractors Association of America), do hereby pledge my support for the Lighting Controls Acceptance Test Technician candidate named below; and do further certify that said individual has successfully completed all NLCAA prequalification criteria per ∮ 10-103-A (c): as determined by NLCAA.

NLCAA Director, or agent, or proxy initials _____

◯ I _____, as a candidate for NLCAA certification as a Lighting Controls Acceptance Test Technician, do hereby agree to read and review the remainder of this contract.

Lighting Controls Acceptance Test Technician Employer candidate initials _____

◯ I _____, hereby acknowledge that I will not consider any charges for use of the NLCAA Acceptance Testing Data Entry Software as a "compelling reason" to not use, or to have a NLCAA Certified Lighting Controls Acceptance Test Technician Employer supervising me not use, the NLCAA Acceptance Testing Data Entry Software.

Lighting Controls Acceptance Test Technician Employer candidate initials _____

◯ I, as a candidate for NLCAA Lighting Controls Acceptance Test Technician do hereby agree to the requirements and obligations to NLCAA and the State of California as detailed in the literature e-mailed to me upon applying for certification. I have read this information and/or viewed the online presentation: "Your Responsibilities as a Lighting Controls Acceptance Test Technician".

I understand my obligations pertaining to:

◯ Audit Procedures ◯ Complaint Procedures ◯ Field Inspections ◯ Form Reviews

◯ Recertification ◯ Retraining

Lighting Controls Acceptance Test Technician candidate initials _____

Certification Candidate _____ Date _____

LIGHTING CONTROLS ACCEPTANCE TEST PROCESS

Building Department Survey Form

As a member of the Authority Having Jurisdiction responsible for the issuance of a Building Permit for the Project having undergone acceptance testing as evidenced by the attached acceptance testing forms, the National Lighting Contractors Association of America is interested in any comments or feedback you might have:

Please return this form to: NLCAA

Or visit our Website at: 3301 E. Hill Street, Suite 408

www.NLCAA.org to comment Signal Hill, CA 90755

NLCAA Random Selection Process

The Random Selection process for both "Random Form Reviews[1]" and "Random Field Inspections[1]" differ in that there is an initial 2% criterion for "Random Form Review[1]" sampling, and an initial 1% criterion for "Random Field Inspection[1]" sampling. Additionally – a Field Technicians first acceptance testing assignment after certification will undergo a "Random Form Review[1]".

There is a 1% criterion for "Random Field Inspection[1]" sampling. This procedure is commenced when a NLCAA certified AT Technician has completed his 20th acceptance testing assignment.

The 2% criteria:

Beginning with the 20th job for a Field Technician, the NLCAA database management software will generate a flag[1] indicating that two 10-sided RPG, (role playing game), die must be cast twice, (once for 10's place and once for 1's place), to determine which 2 of the next 100 acceptance testing jobs for the Field Technician will be selected for a "Random Form Review[1]", (or "Random Field Inspection[1]", if applicable). Triggers[1] will then be inserted into the NLCAA database management software to flag[1] a human operator that a randomly selected job just completed should be inspected within 24 hours if feasible.

Examples: (Roll 1 - Die 1) = 2 => 10 to 20 Range

(Roll 1 - Die 2) = 1 => 11th next job selected

The 1% criteria:

Beginning with the 20th job for a Field Technician, the NLCAA database management software will generate a flag[1] indicating that a 10-sided RPG, (role playing game), die must be cast twice, (once for 10's place and once for 1's place), to determine which of the next 100 acceptance testing jobs for the Field Technician will be selected for a "Random Field Inspection[1]". A trigger[1] will then be inserted into the NLCAA database management software to flag[1] a human operator that the randomly selected job just completed should be inspected within 24 hours if feasible.

Examples: (Roll 1) = 5 => 40 to 50 Range

(Roll 2) = 3 => 43rd next job selected

When an Acceptance Test Technician is selected for "Random Form Review[1]" or a "Random Field Inspection[1]", the Field Technicians' last Employer of record will be informed by first class mail that they must remit the fee, (if not waived), for a "Form Review[1]" or "Random Field Inspection[1]", and that the applicable process will commence for the Field Technicians' last job of record.

Closed-Loop Continuous Dimming Daylighting Lab … Technical Specifications:

ABSTRACT

The purpose of this "lab" is to allow students to analyze a Closed-loop continuously-dimmable Automatic Daylighting System using the "Lightmeter Method". To this end a photocontroller shall have both a "Continuously-dimmable" "Daylight" source and a Continuously-dimmable photocontrolled "Electric Lighting" source impinge directly upon it. As the "Daylight" source is varied from "No daylight" to "Full daylight" conditions the student can gather lightmeter readings and compute the required power reduction and determine both: Sufficient Illumination and Partial Daylight Illumination Pass/Fail criteria.

TECHNICAL OVERVIEW OF HARDWARE

The "Laboratory Rack" shall consist of a Single or Dual Linear or U-tube fluorescent fixture, or CFL, fixture, (Luminaire), - with 0-10V or Digital Control - oriented downward to directly impinge upon a photosensor. Said photosensor shall incorporate 0-10V or Digital Output capable of controlling aforementioned fluorescent "Electric Illumination" fixture, (Luminaire). Additionally: a continuously-dimmable incandescent tubular T-10 bulb; (or CFL bulb), (or bulbs), shall be oriented to impinge directly upon the photosensor to simulate a continuously dimmable "Daylight" source.

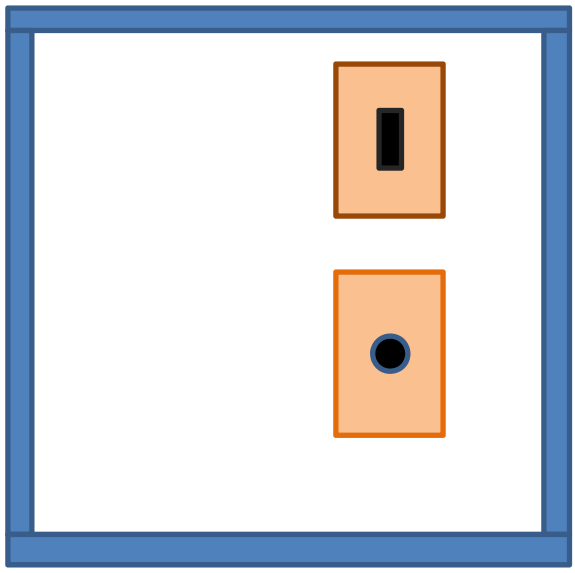
THEORY AND OPERATION

As both the manually continuously dimmed light source and continuously dimmed light source under photo-control illuminate both the photo-controller and students light meter together; this system simulates analysis of a Closed-loop, Continuously Dimmed Automatic daylighting System.

The student will turn off the "daylight" illumination and measure the "No Daylight Reference (electric) Illumination". The student will cover the photo-controller lens and measure the "Full Output Electric Illuminance". The student will introduce "daylight" to a level slightly greater than the "No Daylight Reference Illumination" and measure the "Full Daylight Electric Illuminance". The student will introduce "daylight" to a level of approximately 75% of the "No Daylight Reference Illumination" and measure the "Partial Daylight Combined Illuminance".

The student will then analyze the data for: "Sufficient Illumination"; "Task Tuning"; Illumination Reduction; Power Reduction; and "Partial Daylight Combined Illuminance".

Proper entries will then be entered into excerpts from NRCA-LTI-03-A on the lab sheet.

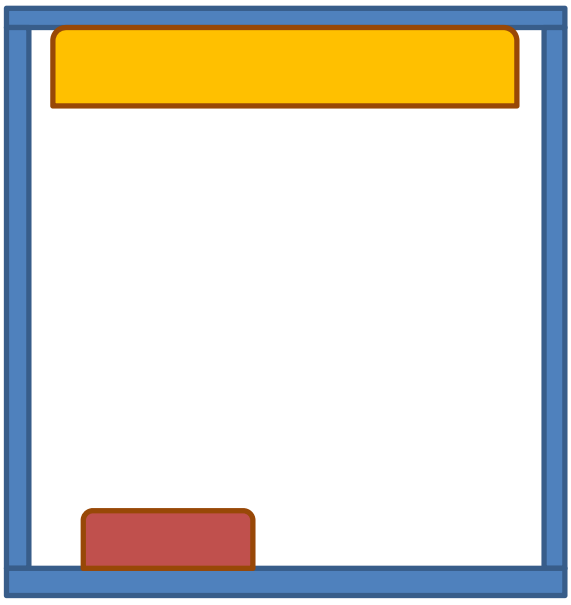


Electric Lighting ON/OFF Switch

“Daylight” Dimmer Switch

REAR VIEW

Dual: “Daylight” and Electric Light Source



Closed-Loop Photo-Controller

Spot to Place Students Light Meter

FRONT VIEW

Open-Loop Stepped Switching Daylighting Lab …
Technical Specifications:

ABSTRACT

The purpose of this "lab" is to allow students to analyze an Open-loop Step-switched Automatic Daylighting System using the "Lightmeter Method". To this end: two 10-mm LED arrays, (or equivalent), shall impinge upon a horizontal surface, (for lightmeter placement). As the "Daylight" source is varied from "No daylight" to "Full daylight" conditions the student can gather lightmeter readings and compute the required power reduction and determine: Partial Daylight Illumination Pass/Fail criteria.

TECHNICAL OVERVIEW OF HARDWARE

The "Laboratory Rack" shall consist of a Single or Dual 10mm LED array(s) or the equivalent oriented downward to directly impinge upon a horizontal surface. A potentiometer or encoder shaft and knob will be accessible to the student to vary both the continuously-dimmable "daylight" portion of the illumination impinging on the horizontal surface – and the "Stepped-electric lighting" impinging on said surface. A potentiometer or encoder shaft with knob will be available to the student to vary both "electric" and "daylight" levels simultaneously. Being fully counter-clockwise; said control shall produce a minimum "daylight", maximum "switched electric lighting" condition. Being full clockwise, said control shall produce a "maximum daylight", "electric lighting" OFF condition. Four indicating LEDs will be visible to indicate the "Stepped-electric lighting" stages that are ON or extinguished.

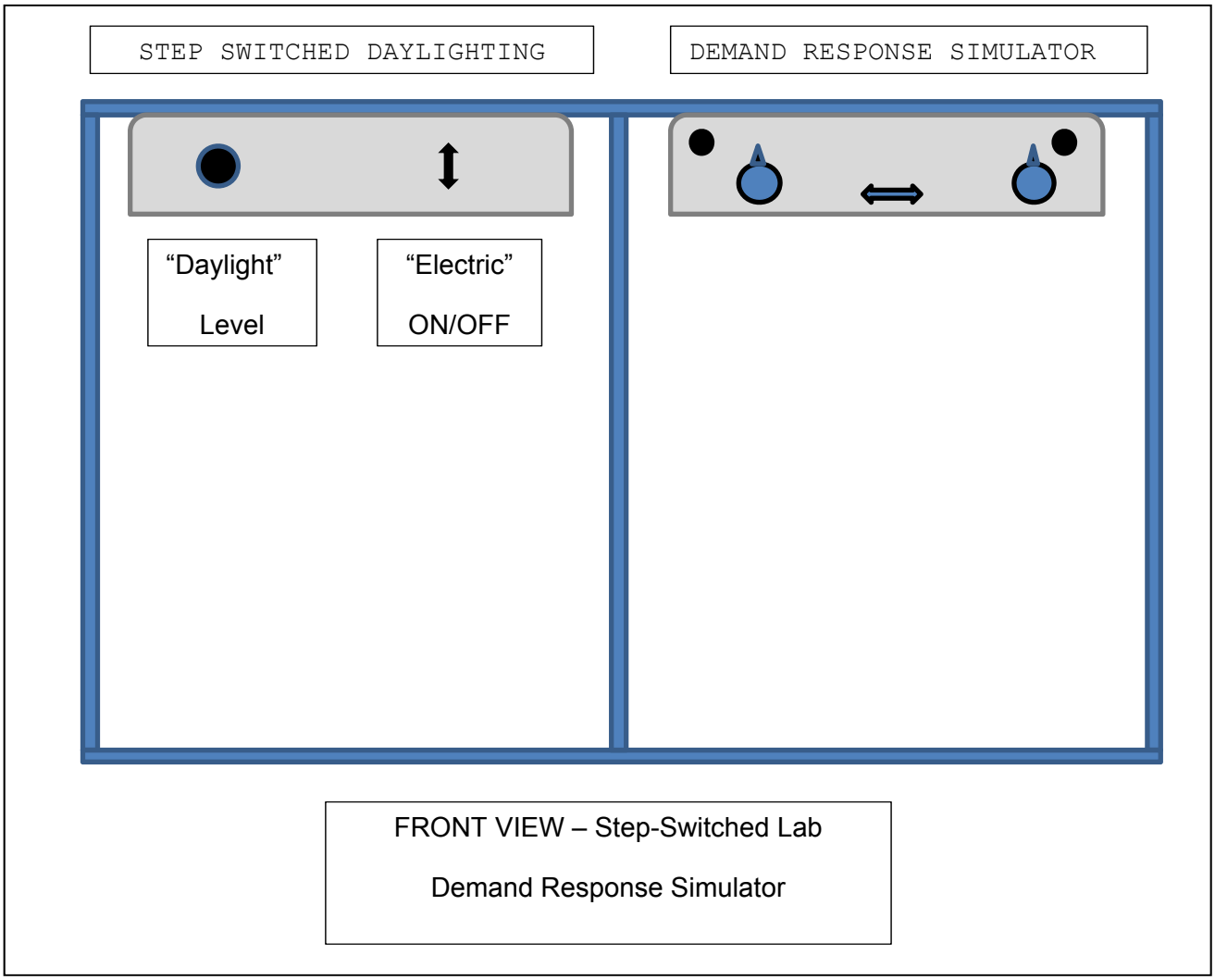
THEORY AND OPERATION

Both Continuously-dimmed "Daylight" and Step-Dimmed "Electric" light sources fall on an area for the students' light meter pickup to be placed. This allows the simulation of an interior area that is Open-Loop, Step-Switched, daylighting controlled. The student will rotate the "daylight" level knob counterclockwise to simulate a "No Daylight" condition and record the "No Daylight Reference Illuminance". The student will note that all four stages of "electric" lighting are ON under this condition.

The student will then rotate the "daylight" knob clockwise until a stage of "electric" lighting just switches OFF. The student will record the Combined Illuminance at this point. The student will, additionally, switch OFF the "electric" lighting source and record the daylight level in the "area" on a lab worksheet. The student will repeat the above actions until the last stage of "electric" lighting switches OFF. The student will record the "daylight" level at this point to determine if it is greater than the "No Daylight Reference Illuminance".

The student will then make proper entries into excerpts from the proper section of form: NRCA-LTI-03-A. And, additionally, graph the results on the lab sheet to produce a "saw tooth" chart.

Lab 2 (Step switched open-loop Daylighting) and Lab 3 (Demand Response) are offered in a combined lab stand:



FRONT VIEW – Step-Switched Lab Demand Response Simulator

Demand Response System Lightmeter Analysis Lab …
Technical Specifications:

ABSTRACT

The purpose of this "lab" is to allow students to analyze a buildings demand response using the "Lightmeter Method". To this end: a 10-mm LED array, (or equivalent), shall impinge upon a horizontal surface, (for lightmeter placement).

TECHNICAL OVERVIEW OF HARDWARE

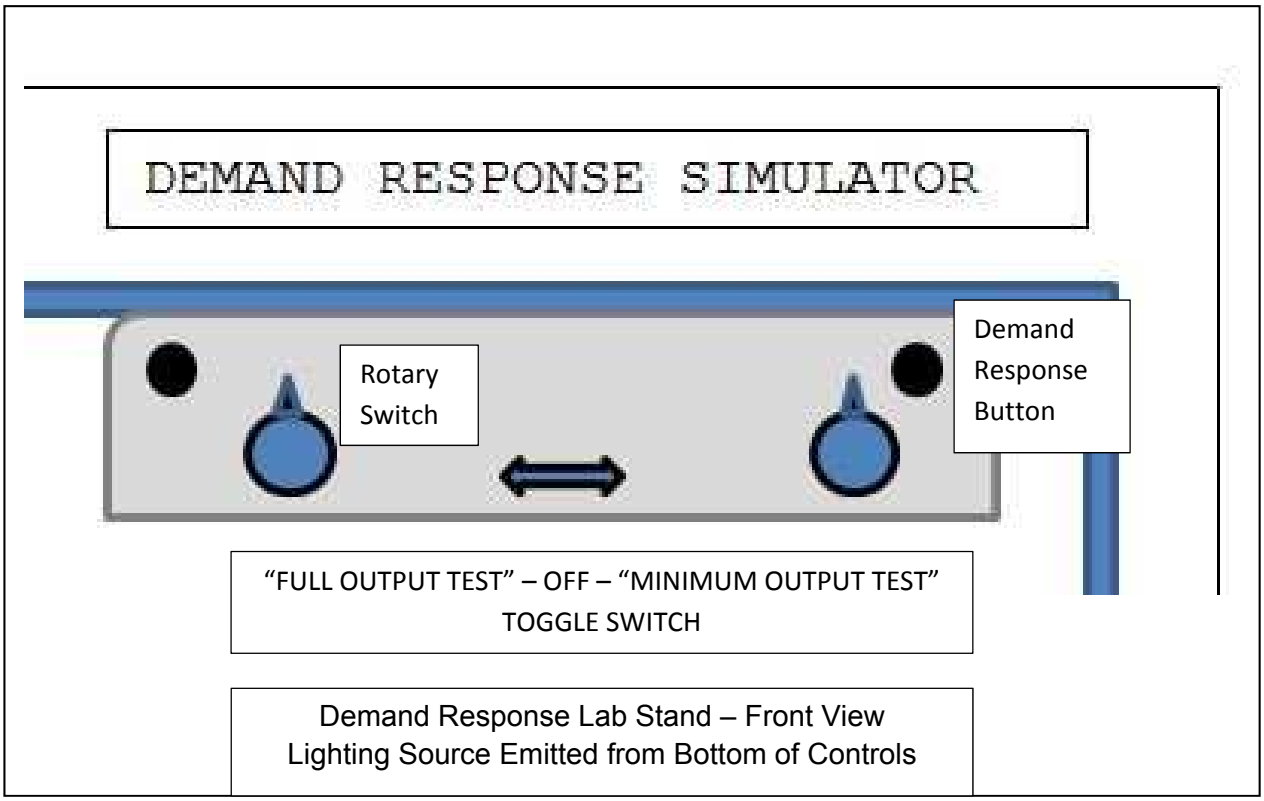
The "Laboratory Rack" shall consist of a Single or Dual 10mm LED array(s) or the equivalent oriented downward to directly impinge upon a horizontal surface. A Six-position rotary-selector switch shall allow the student to select between areas 1 through 5 for the "Full output test". A second rotary-selector switch will allow the student to select areas 1 through 5 for a related "Minimum output test". Additionally a 6th position of each rotary switch will be said to represent a warehouse or similar Complete Building Area Designed space of over 10,000 ft². The "Floor-area" of the simulated space(s) shall be documented on the "Lab Sheet" and/or the "Lab" itself. A toggle-switch shall be present on the "Lab" to allow selection between the "Full output test" or "Minimum output test" rotary-switches. Additionally a push-button shall be present to allow the initiation of a "Demand response condition" for each position of each of the two rotary-switches.

THEORY AND OPERATION

The student will place a light meter pick-up in the area below the LED emitters. The student will select "Full Output" using the toggle switch on the front of the simulator. The student will then place the "Full Output" rotary switch to "Position 1" and record the pre-demand-response illumination level. The student will then depress the "Demand Response" button on the "Full Output", (left), side of the simulator, and record the "demand response" illuminance level. The student will repeat this procedure for positions 2 through 5 of the selector switch on the "Full Output", (left), side of the simulator front panel. The student will, additionally, repeat this procedure for position 6 of the selector switch.

The student will then select "Minimum Output" using the toggle switch on the front of the simulator. The student will then place the "Minimum Output" rotary switch to "Position 1" and record the pre-demand-response illumination level. The student will then depress the "Demand Response" button on the "Minimum Output", (right), side of the simulator, and record the "demand response" illuminance level. The student will repeat this procedure for positions 2 through 5 of the selector switch on the "Minimum Output", (right), side of the simulator front panel. The student will, additionally, repeat this procedure for position 6 of the selector switch.

The student will then fill out excerpts from form: NRCA-LTI-04-A and use the "percent reduction formula[1]" to determine illumination reduction and the "area-weighted average formula" to determine a pass/fail for "areas" 1 through 5, and "building 6".



Shut-OFF Controls Lab … Technical Specifications:

ABSTRACT

The purpose of this "lab" is to allow students to analyze a multi-tier indoor shut-off control scheme. To this end a modern Automatic Time-Switch, (Astronomical Time-Switch), shall be utilized in conjunction with an occupancy sensor and an electronic interval timer, (override). Additionally, a second channel of the Astronomical Time-Switch shall be programmed to control "outdoor lighting". Either or both of the programs installed in each channel shall be verified via a laptop computer, desktop computer, or "pad" device, (or buttons incorporated on the Time Switch), to "Document for the owner automatic time switch programming …"

TECHNICAL OVERVIEW OF HARDWARE

The "Laboratory Rack" shall consist of an Astronomical Time switch with one channel directly energizing an indicating lamp. An Electronic Interval Timing Switch shall be placed in parallel with this output to provide "override" operation. In addition, a second indicating lamp in close proximity to the indicating lamp mentioned above shall be placed on a wallbox occupancy sensor to represent the second circuited luminaire, or lamp, in a Partial-OFF lighting system.

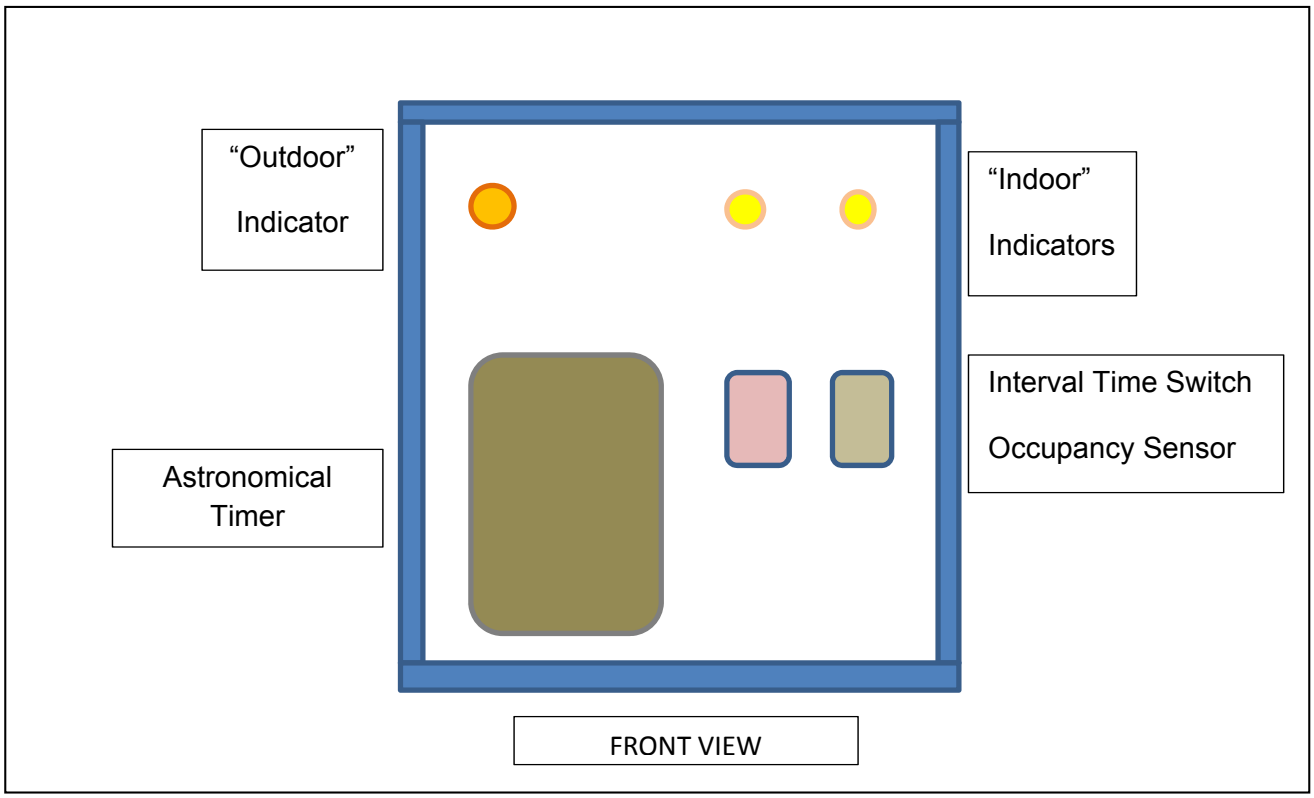
Additionally, the second channel of the timer shall be used to energize a third indicating lamp to simulate controlled outdoor lighting.

THEORY AND OPERATION

Students will place the Astronomical Time Switch in "Occupied" condition and verify proper indicator lamp condition. Students will verify proper occupancy sensor operation. Students will place the Astronomical Time Switch in "Unoccupied" mode and insure proper operation of override switch and verify time-out.

Students will verify proper operation and programming of the "outdoor" lighting channel.

Proper entries will then be entered into excerpts from NRCA-LTI-02-A and NRCA-LTO-02-A on the lab sheet.


“Outdoor”
Indicator
“Indoor”
Indicators
Interval Time Switch
Occupancy Sensor
Astronomical
Timer
FRONT VIEW

Definitions

Audit Form

A form filled out as the initial step in the Audit Procedure. Entries on this form will allow insight into the abilities of the Lighting Controls Acceptance Test Technician and Lighting Controls Acceptance Test Technician Employer who must fill out and sign this form together. This Audit Form will be submitted to NLCAA and cross-correlated with acceptance testing data supplied to the NLCAA database for the job in question.

Audit Field Inspection (Audit Procedure "Audit Procedure Field Inspection")

A Field Inspection prompted by an unsatisfactory Audit Procedure Form Review. As prescribed in The Audit Procedure; (Attachment 5); NLCAA may, at their discretion, require an Audit Procedure Field Inspection to be required. An unsatisfactory Audit Procedure Form Review will be any Audit Procedure Form Review that; in the opinion of NLCAA, their agent(s), or proxies; contains evidence that any of the undesirable activities described under ∮ 10-103-A (c) E. **Certification Revocation Procedures** may have occurred. Additionally: Logical inconsistencies on Audit Forms or mismatches of data between Audit Form entries and acceptance testing data submitted for the same job will – at the discretion of NLCAA – prompt a demand for an Audit Procedure Field Inspection. If this Audit Procedure Field Inspection discloses evidence, (in the opinion of NLCAA Directors, agents, or proxies), of any of the undesirable activities described under ∮ 10-103-A (c) E. **Certification Revocation Procedures,** (described on pages 22 and 23 of this application), a complaint procedure will be initiated by NLCAA against the Employer(s) and Field Technician(s) implicated.

Audit Procedure Form Review

A Form Review to correlate data between an Audit Form and the associated acceptance test form(s)

Audit Procedure Process – Attachment 5

Arbitration agreement

A separate agreement between NLCAA and Lighting Controls Acceptance Test Technicians and Lighting Controls Acceptance Test Technician Employers, if any.

Complaint Procedure – Attachment 7

Complaints may be initiated by persons both within and outside of NLCAA. All Failures of

Complaint Form – Attachment 6

Flag

An indication from the NLCAA Database Management Software to a human operator, or mail management system, indicating an action is to be taken concerning a Field Technician or Employer.

Form Review(s), (Types of …)

Form Review

A viewing and analysis of acceptance testing form data by NLCAA personnel.

Audit Procedure Form Review

A complimentary Form Review that may take place during the Audit Procedure.

Random Form Review

A form review that is initiated "Randomly"

Complaint Procedure Form Review

A Form Review or Review(s) generated by Complaint Procedure Findings

Disciplinary Form Review

A Form Review or Review(s) generated by Complaint Procedure Findings

Training, (types of …)

Certification Training

Initial certification training of Field Technicians or Employers

Recertification Training

Training of Field Technicians or Employers due to changes in the Energy Code

Acceptance Code Update Training

Abbreviated training of Field Technicians or Employers due to minor changes in the Energy Code

Repeat Training

A repetition of initial certification training of Field Technicians or Employers

Refresher Training

Complimentary online training

Disciplinary Training

Intensive training generated by a Complaint Procedure Finding. This retraining and/or evaluation may include: Repeating the NLCAA Acceptance Test Technician Training Course in part or in full, demonstrating acceptance testing proficiency using additional laboratories or mock-ups, verbal question and answer tests, or challenge tests in actual areas with lighting controls installed, or any combination of the proceeding.

Field Inspections, (types of …)

Field Inspection

A "Field Inspection[1]" will consist of a minimum 2-hour site visit during which the Field Technician performing acceptance testing will be observed and interviewed. In addition: any or all of the following may occur; verification of acceptance tests completed, observation of acceptance testing methods, testing of lighting controls by NLCAA or their agent(s), testing of additional lighting controls not sampled by the Acceptance Test Technician(s) performing acceptance tests.

Audit Procedure Field Inspection

A Field Inspection generated by the Audit Procedure and not requiring a Complaint Form

Complaint Procedure Field Inspection

A Field Inspection generated by a Complaint Procedure Finding, for the site in question

Random Field Inspection

A Field Inspection that is initiated "Randomly", for a previously tested site

Scheduled Field Inspection

A field Inspection generated by the scheduling process

Disciplinary Field Inspection

A "Disciplinary Field Inspection" shall be a visit to a building site where certified technicians are completing acceptance tests, or have previously completed acceptance tests. This building site shall be the building site identified in the Complaint Procedure. The Acceptance Test Technician Employer shall arrange with the building owner(s) of the property shown on the complaint in question to allow NLCAA or their agents to enter the property in question to perform testing to verify the Acceptance Testing results. This retesting may encompass anything up to and including a complete retest of any or all lighting controls installed at the property in question. This retesting should be arranged to occur within 60 calendar-days of notification that an inspection is required.

Suspended

A suspension of certification for up to 5 months

Revoked

A revocation of certification

Randomly

Person(s) selected by the “Random Selection” process in Attachment 14

Telecommunications

Any method of interactive communication between two or more parties, including telephone conversation, e-mail, text transmissions, live “chat”, or other internet interactive communications. For the purposes of this document face-to-face conversations shall meet this definition.

Trigger

A number, value, placeholder or setpoint entered into the NLCAA database management software meant to produce a Flag due to some future event.

NLCAA FEE SCHEDULE

The charge for the NLCAA Lighting Controls Acceptance Test Technician Certification course of instruction is: $1500.00

The charge for the NLCAA Lighting Controls Acceptance Test Technician Employer Certification course of instruction is: $650.00

The charge for Recertification Training and examination shall be $400.00

The charge for Acceptance Code Update Training shall be $110.00

The charge for Repeat Training is: up to $650.00 for ATT Employers, up to $1500.00 for AT Technicians

The charge for Disciplinary Training is: $2000.00

The charge for Refresher Training is: $0

The charge for an Audit Procedure Process is: $0

The charge for an Audit Procedure Form Review is: $0

The charge for a Random Form Review is: $75.00

The charge for a Complaint Procedure Form Review is: $150.00

The charge for a Disciplinary Form Review is: $200.00

The charge for a Complaint Procedure Field Inspection is: $400.00

The charge for an Audit Procedure Field Inspection is: $400.00

The charge for a Random Field Inspection is: $400.00

The charge for a Scheduled Field Inspection is: $400.00

The charge for a Disciplinary Field Inspection is: $1500.00 per day

The charge* for the use of NLCAA Acceptance Testing Data Entry Software is: $200.00

*Note: The charge for the use of NLCAA Acceptance Testing Data Entry Software is based on each Building Permit issued where Lighting Controls Acceptance Testing is required for that project.

Note: NLCAA Reserves the right to reduce or waive any fees shown.