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NATIONAL ENERGY MANAGEMENT INSTITUTE COMMITTEE

2022 Amendment (Non-Substantive Changes) to Application for Nonresidential Mechanical Acceptance Test Technician Certification Provider under California Code of Regulations 2022 Title 24, Part 1, Article 1, Section 10-103.2, and Part 6, Sections 120.5

1st Submittal

27 June, 2022

Notice

National Energy Management Institute Committee (NEMIC)

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Preface

NEMIC, in partnership with ITI and NEMI, is submitting this amendment to the application for nonresidential Mechanical Acceptance Test Training and Certification Provider under California Code of Regulations 2022 Title 24, Part 1, Article 1, Sections 10-102 and 10-103.2, as well as Part 6, Sections 120.5 ("Application").

The Application has been submitted and accepted previously, the most recent version dated 01 April 2020 and approved by the CEC on June 10, 2020. This Amendment with Non-Substantive Changes is submitted as reference to that document, under Section 10-103.2(f)1.A.ii. All sections of the Application are submitted with the 2022 Non-Substantive Change Amendment (this document), along with the affected Attachments.

Commented [JZ1]: Need to add new dates of last update.

This Amended ATTCP Application includes:

Adjustment of Training and Exams for the 2022 California Building Energy Efficiency Standards
Mechanical Acceptance Test Employer Training (Attachment 2.2), Mechanical Acceptance Test Employer Exam (Attachment 2.3), Mechanical Acceptance Test Technician Training (Attachment 3.2), and Mechanical Acceptance Test Technician Exams (Attachment 3.4) have all been adjusted to meet the changes of the 2022 Standards. All Training and Exam Attachments are submitted under separate cover with Repeated Application for Confidential Designation. Descriptions of the changes are included with the Attachments.

All other changes are non-substantive in nature and are shown on the full underline and strikeout copy submitted with the Non-Substantial Change Amendment as required under Section 10-103.2(f)1.A.iii.

A detailed summary of all changes to the NEMIC ATTCP Application and affected Attachments is submitted concurrent with this Non-Substantive Change Amendment to the NEMIC ATTCP Application, as required under Section 10-103.2(f)1.A.i. The NEMIC ATTCP Certification Manual (Attachment 2.1) is updated to reflect the Substantive Changes of this Amendment and is submitted with the Amendment Application as a public document. The summaries for the remaining Attachments submitted with requests for confidentiality are included with those Attachments under cover.

This document contains information that NEMIC and its partners, ITI and NEMI, consider to be proprietary and confidential. Parts of this application are submitted to the CEC docket unit with requests for confidentiality in accordance with California Code of Regulations Title 20 § 2505 et seq. All previous requests have been granted.

All questions regarding this application should be addressed to:

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Contents

Definitions

ANSI.....American National Standards Institute

Application .....As used here refers to this document in its entirety as well as all supporting materials provided under the cover of this document or under separate cover pertaining to this document

ATE .....Acceptance Test Employer; see also Mechanical Acceptance Test Employer (MATE), a specific type of Acceptance Test Employer.

ATT .....Acceptance Test Technician; see also Mechanical Acceptance Test Technician (MATT), a specific type of Acceptance Test Technician.

ATTCP .....Acceptance Test Technician Certification Provider

Certificate of Completion.....Certificates of attendance or participation are provided to employers and individuals, here ATE or ATT, that have attended or participated in classes, courses, or other education/training programs or events (National Commission for Certifying Agencies' *Standards for the Accreditation of Certification Programs*).

Certification.....A voluntary process by which employers and individuals, ATE or ATT candidates, are evaluated against predetermined standards for knowledge, skills, or competencies. Participants who demonstrate that they meet the standards by successfully completing the assessment process are granted a time-limited credential. To retain the credential, certificants must maintain continued competence. The credential awarded by the certification program provider denotes that the participant possesses particular knowledge, skills, or competencies. (National Commission for Certifying Agencies' *Standards for the Accreditation of Certification Programs*)

CCR.....California Code of Regulations

Data Registry....Web service with a user interface and database maintained by a Registration Provider that complies with the applicable requirements in the Title 24 Reference Joint Appendix JA7 and provides for registration of residential or nonresidential compliance documentation used for demonstrating compliance with CCR Part 6. In this document it is referred to as the Registry.

Database .....Body of information and information system provided by NEMIC to meet the Data Registry requirements of Title 24 Reference Joint Appendix JA7

ICB .....International Certification Board, a committee of NEMIC

ISO .....International Standards Organizations

ITI .....International Training Institute for the Sheet Metal and Air Conditioning Industry

JATC.....Joint Apprenticeship Training Center

MATE.....Mechanical Acceptance Test Employer, an Acceptance Test Employer certified by the ATTCP to meet Mechanical Acceptance Test Employer requirements

MATT.....Mechanical Acceptance Test Technician, an Acceptance Test Technician certified by the ATTCP to perform Mechanical Acceptance Tests.

NEMI .....National Energy Management Institute, Inc.

NEMIC .....National Energy Management Institute Committee

Registry .....Term used in this document to reference the Data Registry as defined in Reference Joint Appendix JA-7, see also Data Registry.

SMACNA.....Sheet Metal and Air Conditioning Contractors' National Association

SMART.....International Association of Sheet Metal, Air, Rail, and Transportation Workers (SMART)

SME .....Subject matter expert

Standards .....Current California Building Energy Efficiency Standards

TAB .....Testing, adjusting, and balancing

TABB.....Testing, Adjusting and Balancing Bureau, a committee of NEMIC

1. Organization of the NEMIC ATTCP

In accordance with CCR Title 24 Part 1 Section 10-103.2(c)1, this Section documents the organizational structure of the NEMIC ATTCP, including explanations of the organization type, by-laws, and ownership structure.

This section was previously submitted with the date 27 February 2015 and approved by the CEC on March 11, 2015. Only non-substantive changes to this section are submitted with the 2022 Substantive Change Amendment.

1.1 Structure of the NEMIC ATTCP

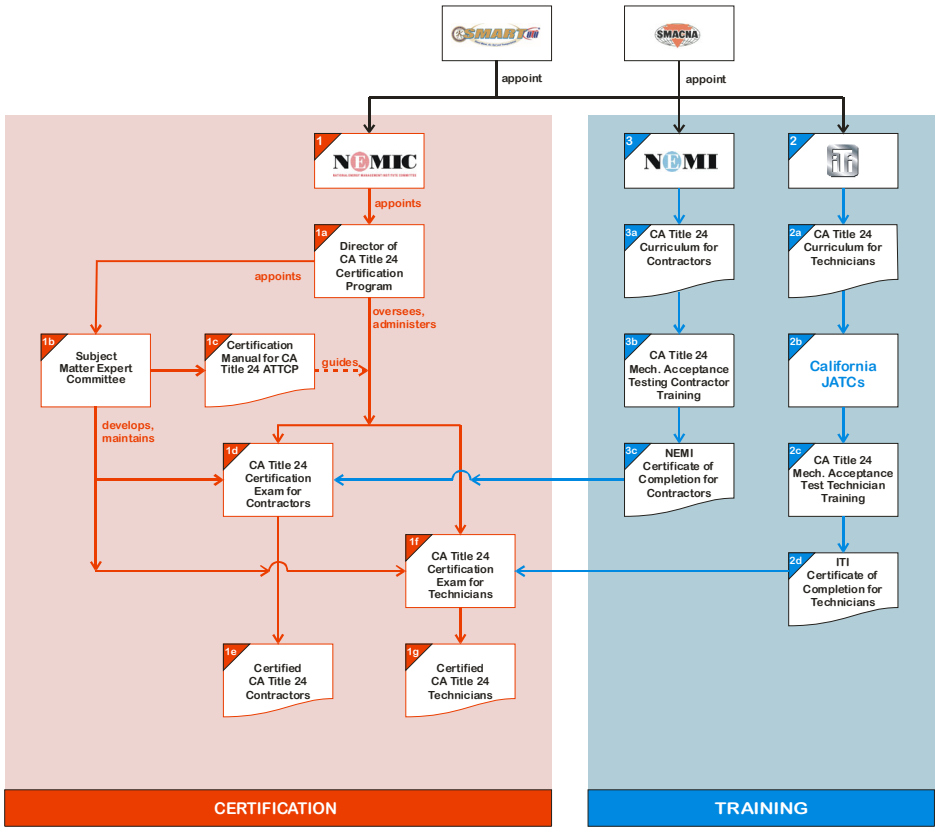
The structure of the NEMIC ATTCP is designed to meet the requirements of CCR Title 24 Part 1 Section 10-103.2(c)3F: an organizational structure that assures quality, independent oversight and accountability, while also meeting the generally accepted definition of a certification program, particularly as it conforms to ISO/IEC 17024[1]. ISO/IEC 17024 certification program standards require training and certification to have organizational separation. Accordingly, the NEMIC ATTCP application identifies separate organizational entities to provide training with a "Certificate of Completion" and to provide "certification." The following table depicts the differences between a certification and a certificate of completion and how it is applied to the NEMIC ATTCP.

Certification	Certificate of Completion
Results from an assessment process, here the NEMIC certification exams for both ATEs and ATTs	Results from an educational process, here the ITI and NEMI classes for ATTs and ATEs respectively
Indicates mastery /competency	Indicates completion of a course (s), here training classes by ITI (for ATTs) and NEMI (for ATEs)
Standards set through a defensible, formal process (ISO 17024)	Course content set a variety of ways, here pre-requisite knowledge, classroom and hands-on training
Typically requires some amount of professional experience, here minimum of 3-years of relevant experience	For both newcomers and experienced professionals, here TABB-certification is pre-requisite
Awarded by a third-party, standard-setting organization, here NEMIC	Awarded by training and educational programs or institutions, ITI and NEMI
Has on-going requirements to maintain	Is the end result
What ATEs and ATTs receive after successfully passing their respective certification exams	What ATEs and ATTs receive after completing the NEMI or ITI classes

[1] International Standards Organization. 2012. ISO/IEC 17024 *Conformity assessment – General requirements for bodies operating certifications of persons*.

NEMIC will grant **certifications** to the ATEs and ATTs, while its partners ITI and NEMI will issue *certificates of completion*.

The structure and basic workflow of the NEMIC ATTCP and its training partners is depicted in the following diagram:



Structure and Basic Workflow of the NEMIC ATTCP

The following is a detailed explanation of the structure and principal workflow:

1 NEMIC is overseen by a Board of Trustees, half of whom are appointed by SMACNA and half by SMART

1a The NEMIC Trustees appoint a director to head the California Title 24 Acceptance Test Certification Program.

1b The Director appoints the Subject Matter Expert Committee members. The task of the SME Committee is to develop and maintain the certification program, including developing the Certification Manual as well as the certification examinations for both the ATEs and ATTs.

1c The SME Committee develops and maintains the Certification Manual for the California Title 24 ATTCP Program. The Manual sets forth the rules and regulations that ATEs and ATTs must follow to become certified and to maintain their certifications.

1d The Director administers the certification examination for ATEs in accordance with the rules and regulations set forth in the Certification Manual.

1e The ATE candidates will be issued a certification document once they successfully pass the certification examination for ATEs.

1f The Director administers the certification examination for ATTs in accordance with the rules and regulations set forth in the Certification Manual.

1g NEMIC will issue the ATT candidates a certification document once they successfully pass the certification examination for ATTs.

ICB and TABB are committees of NEMIC. Both maintain the certification programs for NEMIC. The TABB certification for TAB technicians and supervisors is American National Standards Institute (ANSI) accredited under ISO 17024 (ANSI Accreditation 0728). NEMIC offers two levels of Mechanical Acceptance Test Technician Certification. To be eligible for MATT Level 2 certification, applicants must be TABB-certified. The TABB program's ANSI-ISO 17024 accreditation requires separation of training or teaching functions from the certification program. Thus, the training for ATEs and ATTs is developed and provided by NEMI and ITI respectively.

2 ITI produces a standardized sheet metal curriculum supported by a wide variety of training materials including instructor manuals, student textbooks and workbooks, videos, DVDS, CD-ROMS, and online training.

2a ITI develops and maintains the training materials for the CCR Title 24 acceptance testing program for ATTs.

2b ITI delivers the training via multiple JATCs located throughout the state of California. JATCs constitute the local training facilities through which ITI delivers its classes. The facilities provide hands-on-training in state-of-the art labs as well as classroom instruction.

2c The JATC delivers the Title 24 ATTCP training for ATT candidates. The training consists of self-paced training modules, classroom review and hands-on training in laboratories.

2d ATT candidates who successfully complete all training modules, will be issued a Certificate of Completion making them eligible to take the ATT certification exam.

NEMI is an independent contractor to NEMIC and provides training to supervisors and contractors (employers).

3 NEMI provides training to supervisors and contractors.

3a NEMI develops and maintains the training materials for the CCR Title 24 acceptance testing program for ATEs.

3b NEMI delivers the training for the ATE candidates as mandated by CCR Title 24 Part 1 Section 10-103.2(c)3C.

3c ATE candidates that successfully complete the training will be issued a Certificate of Completion, making them eligible to take the certification exam for ATEs.

1.2 NEMIC, NEMI, and ITI

NEMIC is joint labor management trust, which is tax exempt under Internal Revenue Code Section 501(c)(6). The Board of Trustees is responsible for the administration of NEMIC. A copy of the Trust Agreement is attached (Attachment 1.1).

ITI is a welfare plan under the Employee Retirement Income Security Act (ERISA) and is tax exempt under Code Section 501(c)(3). ITI assets are held in Trust, which is administered by a joint board of trustees, half of whom are appointed by SMACNA and half by SMART. A copy of the Trust Agreement is attached (Attachment 1.2). The Board of Trustees is responsible for the administration of the ITI.

NEMI is a Non-Profit corporation. NEMI is governed by a Board of Directors, half of whom are appointed SMACNA and half by SMART. The Board of Directors is responsible for the administration of NEMI. The Articles of Incorporation and Bylaws are attached (Attachment 1.3).

1.3 NEMIC Structure

NEMIC's mission is to develop business opportunities for contractors and SMART. NEMIC has two certification bodies: the International Certification Board and the Testing, Adjusting and Balancing Bureau. The charters of the ICB and TABB are attached (Attachment 1.4 (ICB) & Attachment 1.5 (TABB).

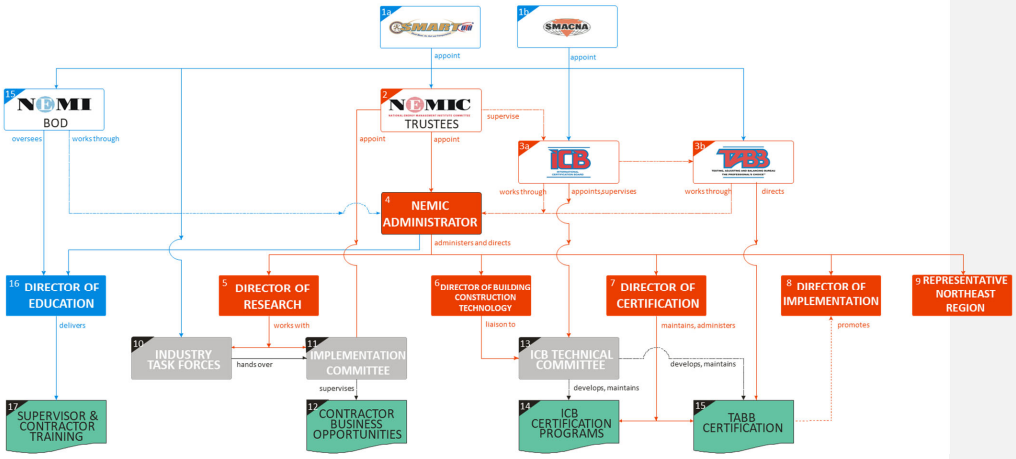
The organizational structure of NEMIC is diagrammed on the following page and is described below:

1 NEMIC is a joint labor management trust. Half of the NEMIC trustees are appointed by SMACNA (1b) and the other half by SMART (1a).

2 The NEMIC trustees appoint the NEMIC Administrator. SMACNA and SMART jointly appoint the six members to the ICB Board and TABB Board. ICB and TABB are two committees of NEMIC.

3a ICB is managed by its Board. The ICB is responsible to and supervised by the NEMIC Trustees. The mission of the ICB is to direct and implement a comprehensive set of certification programs to assure customers of the unionized sheet metal industry of the quality advantages of utilizing persons or entities certified by the ICB. The ICB appoints and oversees the ICB Technical Committee, which is responsible for developing and maintaining the ICB and TABB certification programs.

3b TABB is a committee of NEMIC.TABB is responsible to and supervised by the ICB. The purpose of TABB is to direct and implement a comprehensive certification program of testing, adjusting and balancing contractors and employees who are eligible for certification under TABB requirements.



Organizational Schematic of NEMIC

4. The NEMIC Administrator works with the ICB, TABB, and NEMI and administers and oversees their activities and serves as Chairperson member of the ICB Technical Committee. There are four major activities of NEMIC each directed by a responsible person as shown above.

5. The NEMIC Director of Research oversees the direction, operational performance, and external relationships of the Industry Task Forces and the Implementation Committee and their work

plans. The NEMIC Director of Research serves as the Recording Secretary member of the ICB Technical Committee.

6. The NEMIC Director of Building Construction Technology serves as the technical expert for NEMIC. The DBCT leads NEMIC's technology team that identifies new technologies, market developments, and trends that will affect skill sets of technicians and contractors, and also serves as a member of the ICB Technical Committee.

7 The NEMIC-ICB Director of Certification performs duties and responsibilities within the guidelines established by the ICB, and oversees the direction, operational performance and external relationships of the program's work plans. The Director of Certification supervises and coordinates the office staff activities relating to certification issues including policies and procedures for new certifications, changes to existing certifications, renewal of existing certifications, and database training. The Director of Certification serves as a member of the ICB Technical Committee.

8. The NEMIC Director of Implementation is responsible for implementation of policies and procedure to TABB and is the lead in promoting TABB to the HVAC industry, national and local level tradeshows, and local conventions within the HVAC industry. The Director of Implementation seeks speaking engagements where TABB can be promoted to HVAC engineers and specifiers of construction documents and serves as a member of the ICB Technical Committee.

9. The NEMIC Representative-Northeast Region oversees the direction, operational performance, and work plans of the NEMIC Task Forces, develops and is responsible for the success of implementation advisory groups to promote the value of ICB/TABB certified personnel to local, state and federal government officials and the architectural and engineering professionals in the building construction industry.

10. The Industry Task Forces are convened on an as-needed basis. Their members are appointed in equal number by SMART and SMACNA. Their task is to explore emerging markets for contractors and employment opportunities for the SMART workforce.

11. The Implementation Committees are convened on an as-needed basis. Their task is to implement the business opportunities identified by the Industry Task Forces. Their task is to assist contractors to promptly enter an emerging market.

12. The final output of the work of an Implementation Committee is a detailed plan.

13. The ICB Technical Committee is charged with the development and maintenance of the various ICB/TABB certification programs. It consists of the NEMIC Administrator, NEMIC Director of Research, NEMIC Chief Technology Officer, NEMIC ICB Director of Certification, NEMIC TABB Chief Operating Officer, and two or more subject matter experts appointed by the ICB.

14. The output of the ICB Technical Committee is a series of certification exams specific to several specialty areas including the TABB certification exams for TAB technicians and TAB supervisors.
15. The TABB certification was designed for the sole purpose of providing the HVAC Industry ANSI-accredited testing, adjusting and balancing certification under ISO/IEC 17024 Standard.
16. NEMI is an independent contractor to NEMIC. Its major task is to provide training to supervisors and contractors. The NEMI Board has elected to work through the NEMIC Administrator in coordinating the training needs of HVAC industry it serves.
17. NEMI is run by the Director of Education who works under the direction of the NEMIC Administrator.

2 Certification of Acceptance Test Employers

This section addresses CCR Title 24 Part 1 Section 10-103.2(c)2, i.e., documents how the NEMIC program includes certification and oversight of ATEs to ensure quality control and appropriate supervision and support for ATTs.

This section was previously submitted with the date 27 February 2015 and approved by the CEC on March 11, 2015. Only non-substantive changes to this section are submitted with the 2022 Substantive Change Amendment.

2.1 Certification Process for Acceptance Test Employers

The certification process for ATEs, including MATEs has two components:

Requirement for training in regard to CCR Title 24 Part 1 Section 10-103.2(c)3C as a prerequisite to take the (Mechanical) Acceptance Test Employer Certification exam
Passing of the Certification exam

A copy of the NEMIC ATTCP Certification Manual that describes all the procedures regarding certification of ATTs and ATEs ("Manual") is Attachment 2.1. This is a public document and is posted on the ATTCP website. The Certification Manual ("Manual") also lists several eligibility requirements which the ATE must meet to be able to take the ATE Certification Exam (see Section 4.4 of the Manual).

A copy of the Certification Exam for Mechanical Acceptance Testing Employers has been submitted to the CEC Docket Unit under separate cover with a request for confidentiality.

A copy of the required Acceptance Testing Employer Training Materials as mandated per CCR Title 24 Part 1 Section 10-103.2(c)3C has been submitted to the CEC Docket Unit under separate cover with a request for confidentiality.

2.2 Roles and Responsibilities of the MATE

The role of the MATE is to understand the responsibilities of an employer performing Mechanical Acceptance Test work. In addition, the MATE is responsible for registering the contractor on the NEMIC ATTCP database.

An employer may employ multiple individuals certified as MATEs; however, only one MATE registers the employer on the NEMIC ATTCP database. Each NEMIC-certified MATE registered on the database must also employ at least one NEMIC-certified MATT.

For clarification, the MATE may also be the Responsible Person as defined by the Standards, but only if eligible under Division 3 of the Business and Profession Code in the applicable classification. The NEMIC ATTCP does not assess qualifications of any individual to become or bear the responsibilities of the Responsible Person as defined by the Standards.

2.3 Employer Certification Obligations and Code of Conduct

NEMIC-certified ATEs, and MATEs must meet a number of obligations and must adhere to the Code of Conduct as spelled out in the Certification Manual to maintain their certification (see Section 4.7 *Employer Certification Obligations and Code of Conduct* in the Certification Manual). The objective of the Certification Obligations and the Code of Conduct is to maintain a high level of performance by the Employers throughout the life of their certification. The Obligations section also addresses business operations issues and is designed to provide a high degree of confidence with building code officials and building owners regarding how the Employers meet their business responsibilities. If Employers or their Technicians fail in their obligations or is deficient in their business conduct, the affected parties, i.e., all entities involved in a specific building project, such as the building owner, mechanical systems designer, or general contractor, may file a complaint with NEMIC as set forth in the Certification Manual.

The process of certification of ATEs and ATTs is designed to assure quality to all parties involved in a project. In particular

- NEMIC's ATTCP Certification process is independent from other entities and thus avoids conflicting interests and activities.
- NEMIC's ATTCP Certification process is impartial. NEMIC does not provide certification training or education or related services to applicants. Training of technicians seeking ATT or MATT certifications is provided by ITI and training of individuals seeking ATE certification is provided by NEMI. The certification exams for both technicians and employers are developed by a Subject Matter Expert Committee under NEMIC.
- NEMIC's ATTCP Certification process operates in an open and transparent manner. All policies and procedures will be posted on its website for review by interested parties.

3 Training and Certification Procedures for ATTs

This section addresses CCR Title 24 Part 1 Section 10-103.2(c)3A, B, and C:

- Provides a complete copy of all training and testing procedures, manuals, handbooks and materials
- Document how the NEMIC training and certification procedures include both hands-on experience and theoretical training for ATTs.
- Documents pre-qualification criteria for ATTs

NEMIC provides two levels of MATT Certifications.

A NEMIC Certified MATT is one who is knowledgeable about Mechanical Acceptance Testing as required by the Standards. The MATT performs the acceptance verification reported on the Certificate of Acceptance (Field Technician).

A NEMIC-certified MATT Level 1 performs the work described above for the Mechanical Systems Acceptance Tests listed in Section 10-103.2(1)B of the Standards.

For clarification, the MATT Level 1 Scope for the 2022 Standards includes the following nine Mechanical Acceptance Tests:

1. NA7.5.1 Outdoor Air Ventilation Systems
2. NA7.5.2 Constant Volume, Single Zone Unitary Air Conditioners and Heat Pumps
3. NA7.5.4 Air Economizer Controls
4. NA7.5.5 Demand Control Ventilation Systems
5. NA7.5.6 Supply Variable Flow Controls
6. NA7.5.7 Hydronic System Variable Flow Controls
7. NA7.5.9 Hydronic System Variable Flow Controls
8. NA7.5.10 Automatic Demand Shed Controls
9. NA7.5.17 Occupied Standby Acceptance

A NEMIC-certified MATT Level 2 performs the work described above for all the Mechanical Systems Acceptance Tests listed in section 120.5 and 160.3 of the Standards.

For clarification, the MATT Level 2 scope for the 2022 Standards includes the following twenty-six Mechanical Acceptance Tests:

1. NA7.5.1 Outdoor air ventilation systems (MATT Level 1 & 2)
2. NA7.5.2 Constant-Volume, Single Zone Unitary Air Conditioners and Heat Pumps

(MATT Level 1 & 2)

3. NA7.5.3 Duct Systems as required by the Standards (MATT Level 2 only)
4. NA7.5.4 Air Economizer Controls (MATT Level 1 & 2)
5. NA7.5.5 Demand Control Ventilation Systems as required by the Standards

   (MATT Level 1 & 2)
6. NA7.5.6 Supply Variable Flow controls (MATT Level 1 & 2)
7. NA7.5.7 Hydronic System Variable Flow Controls (MATT Level 1 & 2)
8. NA7.5.9 Hydronic System Variable Flow Controls (MATT Level 1 & 2)
9. NA7.5.7 Boiler and/or Chiller Isolation (MATT Level 1 & 2)
10. NA7.5.8 Hydronic Systems Supply Temperature Reset Controls (MATT Level 2 only)
11. NA7.5.10 Automatic Demand Shed Controls (MATT Level 1 & 2)
12. NA7.5.11 Fault Detection and Diagnostics (FDD) for Air Handling Units and Zone Terminal Units (MATT Level 2 only)
13. NA7.5.12 Automatic Fault Detection and Diagnostics (FDD) for Air Handling Units and Zone Terminal Units (MATT Level 2 only)
14. NA7.5.13 Distributed Energy Storage DX AC Systems (MATT Level 2 only)
15. NA7.5.14 Thermal Energy Storage (TES) Systems (MATT Level 2 only)
16. NA7.5.15 Supply Air Temperature Reset Controls (MATT Level 2 only)
17. NA7.5.16 Water-cooled Chillers served by Cooling Towers with Condenser Water Reset Controls (MATT Level 2 only)
18. Part 6 as applicable Energy Management Controls System (MATT Level 2 only)
19. NA7.5.17 Occupant Sensing Zone Controls (MATT Level 1 and 2)
20. NA7.5.18 Dwelling Unit Ventilation Acceptance (MATT Level 2 only)
21. NA2.2.4.1.4 Kitchen Range Exhaust Acceptance (MATT Level 2 only)
22. NA2.2.4.1.1 IAQ Ventilation Acceptance (MATT Level 2 only)
23. NA2.2.4.1.5 Dwelling Ventilation Acceptance (MATT Level 2 only)
24. NA2.3.3 MF Envelope Leakage Acceptance (MATT Level 2 only)
25. NA7.18.3 System Duct Leakage Acceptance (MATT Level 2 only)
26. NA7.18.4 HRV-ERV Verification Acceptance (MATT Level 2 only)

Item 18 Energy Management Controls Systems will be tested according to NA7.7.2

Certification of MATTs and MATEs is documented in the NEMIC ATTCP Certification Manual (Attachment 2.1)

3.1 Pre-qualifying Technician Training

MATT Level 1

Technicians who wish to become certified by NEMIC as MATT Level 1 must have a minimum of three years of professional experience and expertise in mechanical controls and systems, as determined by NEMIC, and meet one of the following three criteria:

1. Applicant is currently enrolled in a state-approved SMART apprenticeship program and passed a written qualification examination.
    a. The qualification examination is designed to show that the applicant's professional experience has provided them with the knowledge base required to perform the Mechanical Systems Acceptance Tests listed in Section 10-103.2(b)1.B of the Standards
2. Applicant has attained SMART journeyperson status and passed a written qualification examination.
    a. The qualification examination is designed to show that the applicant's professional experience has provided the knowledge base required to perform the Mechanical Systems Acceptance Tests listed in Section 10-103.2(b)1.B of the Standards
3. Applicant is an ICB-certified TABB Technician with at least three years of relevant professional experience and expertise in mechanical controls and systems. The Qualification Exam is not required for an ICB-certified TABB Technician because the process to become TABB certified verifies the Technician's relevant professional experience. More information about the requirements to become an ICB-certified TABB Technician can be found at the www.icbcertified.org website under the Resources section, within the Certification Manual for Technicians, also included as Attachment 3.1 to this Application (previously submitted).

Applicants for MATT Level 1 certification who meet one of the above criteria must also meet both of the following requirements:

1. Be an individual with respect to whom contributions are payable to the NEMIC.
2. Hold an ITI certificate of completion of having received training on mechanical acceptance testing mandates and procedures as specified by the latest version of the California Building Energy Efficiency Standards as they pertain to the MATT Level 1 scope.

MATT Level 2

TAB technicians who wish to become certified by NEMIC as a Mechanical Acceptance Test Technician Level 2 (formerly an ATT) must be TABB-certified[2]. TABB-certification requires that the applicant meets the following qualifications as detailed in the ITI Certification Manual for Technicians (a copy of the Manual is found in Attachment 3.1):

- *"Passed both the written and performance tests as set forth in Section 2.3 of this Manual.*
- *Demonstrated TAB standards of proficiency as set forth in this Manual."*[3]

As indicated above the certification exam has both a written and a performance component. The written exam is five hours long and covers all the standards of proficiency as outlined in the ITI Certification Manual for Technicians. To be eligible to take the performance exam candidates must pass the written exam. The performance exam consists of two four-hour sessions. The first session focuses on airside systems and the second addresses hydronic systems. These are hands-on exams where the candidates are required to test, adjust, and balance small model systems that replicate the features and intricacies of large commercial HVAC systems.

The ICB-certified TABB Technician Certification is ANSI accredited.

TAB technicians who wish to be TABB-certified require a minimum of three years of on-job training (OJT). Generally, candidates have more years of OJT than the required minimum. In addition to OJT, the candidates will have taken classroom training sessions. The following table lists the standards of proficiency (knowledge base) as detailed in the ITI Certification Manual and compares them to the topics listed in CCR Title 24 Part 1 Section 10-103.2(c)3B.

Topics listed as points s) Building Energy Efficiency Standards mechanical acceptance testing procedures; and t) Building Energy Efficiency Standards acceptance testing compliance documentation for mechanical systems in the table on the following page are addressed in Section 3.2.

[2] NEMIC ATTCP Certification Manual
[3] International Training Institute Certification Manual for Technicians

	Curricula Topics Listed In CCR Title 24 Part 1 Section 10-103- B(C)3B																				
Standards Of Proficiency (Knowledge Base) As Detailed In The ITI Certification Manual For TAB Technicians	a) Constant volume system controls	b) Variable volume system controls	c) Air-side economizers	d) Air distribution system leakage	e) Demand controlled ventilation with CO2 sensors	f) Demand controlled ventilation with occupancy sensors	g) Automatic demand shed controls	h) Hydronic valve leakage	i) Hydronic system variable flow controls	j) Supply air temperature reset controls	k) Condenser water temperature reset controls	l) Outdoor air ventilation systems	m) Supply fan variable flow controls	n) Boiler and chiller isolation controls	o) Fault detection and diagnostics for packaged direct-expansion units	p) Automatic fault detection and diagnostics for air handling units and zone terminal units	q) Distributed energy storage direct-expansion air conditioning systems	r) Thermal energy storage systems	s) Building Energy Efficiency Standards mechanical acceptance testing procedures	t) Building Energy Efficiency Standards acceptance testing compliance documentation for mechanical systems
Mathematics	✗	✗		✗	✗	✗				✗	✗	✗	✗							
Fluid Flow	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		✗	✗	✗	✗	✗	✗		
Heat Transfer	✗	✗					✗	✗	✗	✗	✗	✗		✗	✗	✗	✗	✗		
Psychrometrics	✗	✗	✗		✗	✗	✗			✗	✗	✗		✗	✗	✗	✗	✗		
Project Documents	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
Air Distribution Systems	✗	✗	✗	✗	✗	✗	✗					✗			✗	✗	✗	✗		
Hydronic Distribution Systems							✗	✗	✗		✗			✗		✗	✗	✗		
Automatic Control Systems	✗	✗	✗		✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
Electrical Systems	✗	✗											✗							
Instrumentation	✗	✗	✗	✗			✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
Direct Digital Controls	✗	✗	✗		✗	✗	✗		✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
Preliminary TAB Procedures	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		
Air System TAB Procedures	✗	✗	✗	✗	✗	✗	✗					✗			✗	✗	✗	✗		
Specific Air System Procedures	✗	✗	✗	✗	✗	✗	✗			✗		✗	✗		✗	✗	✗	✗		
Hydronic System TAB Procedures							✗	✗	✗		✗			✗		✗	✗	✗		
Considerations for TAB																				
Reference Data	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗		

As shown in the table above, the standards of proficiency for TABB-certified technicians cover all training curricula for MATTs in analysis, theory, and practical application as mandated by the Title 24 Building Energy Efficiency Standards.

3.2 Training for MATTs

3.2.1 Classroom Training

Training for MATTs includes classroom training with hands-on demonstration in all mechanical acceptance tests as specified by Title 24 Part 6 Section 120.5 – Required Nonresidential Mechanical System Acceptance.

NEMIC provides two levels of MATT Certification. Certification Exams and the Technician Training for both are developed from the Knowledge Bases as identified in the NEMIC ATTCP Certification Manual, Section 6 (Attachment 2.1) The training encompasses several modules:

- Module 1 Overview of the Mechanical Acceptance Testing Technician Training & Certification Process, Intro & Fundamentals
- Module 2-10 (MATT Level 1) Mechanical Acceptance Tests within MATT Level 1 Scope
- Module 2-19 (MATT Level 2) Mechanical Acceptance Tests within MATT Level 2 Scope

The training materials include Resource Manuals assembled for the current and immediately preceding versions of the Standards.

A copy of the training modules as developed from the Knowledge Bases is in Attachment 3.2 (Submitted under CEC Docket Request for Confidentiality).

3.2.2 Hands-on Training

The SMART Locals 104, 105, and 206, which cover all of California, in conjunction with the California Association of Sheet Metal and Air Conditioning Contractors' National Association (CAL SMACNA) jointly fund and operate the following Joint Apprenticeship Training Centers (JATC):

- Bakersfield
- City of Industry
- Fairfield
- Fresno
- Modesto
- Monterey
- Sacramento
- San Diego
- San Jose
- San Leandro
- Ventura

Each JATC features classrooms and laboratories, where apprentices and journeypersons (technicians) receive hands-on training. Attachment 3.3 (Submitted under CEC Docket Request for Confidentiality)

describes a typical JATC and its various HVAC equipment and systems and indicates on the pieces of equipment used to train ATT and MATT applicants.

3.3 Certification of MATTs

Certification of MATTs and MATEs is documented in the NEMIC ATTCP Certification Manual, Attachment 2.1.

The Certification Manual details the eligibility requirements that each candidate must meet prior to being allowed to take the ATTCP certification exam. The applicant must:

- Be eligible as described in Section 3.3 of the Manual
- Hold an ITI certificate of completion of having received training on mechanical acceptance testing mandates and procedures as specified by the latest version of the California Building Energy Efficiency Standards
- Have passed the Certification Exam(s) as set forth in the Manual.

A copy of the Mechanical Test Technician Certification Exams is found in Attachment 3.4 (Submitted under CEC Docket Request for Confidentiality)

3.4 Instructor to Trainee Ratio

In accordance with CCR Title 24 Part 1 Section 10-103.2(c)3B(iv), this Section documents that its instructor to trainee ratio is sufficient based on industry standards and other relevant information.

As indicated in Section 1 of the subject application, the training function is provided by ITI for ATT candidates and by NEMI for ATE candidates.

The training programs and materials offered by ITI consistent with its mission to train and develop apprentices and journeypersons in the sheet metal industry. ITI commits to:

- Provide and maintain training and retraining programs
- Conduct train-the-trainer programs
- Develop and distribute training materials designed to improve the quality of workmanship and productivity in the sheet metal industry, including training to meet the 2022 California Building Standards
- Investigate, research and monitor changing technology and specialty fields to meet the ever-evolving demands of a dynamic industry

Commented [JZ2]: Is this year still accurate?

NEMI has been training employers since 1981.

The instructor to trainee ratio varies depending on whether the instruction is classroom only or if it includes hands-on training in the laboratories / shop floor. Historically, both ITI and NEMI have maintained

a 1-20 instructor-to-trainees ratio for classroom instruction. That ratio changes significantly when hands-on training is involved. In laboratory / shop floor hands-on instruction the instructor-to-trainees ratio is 1 to 6-12. Because the training of the ATT and MATT candidates includes hands-on instruction, the instructor-to-trainees ratio is about 1-10.

3.5 Technician Coverage of the State of California

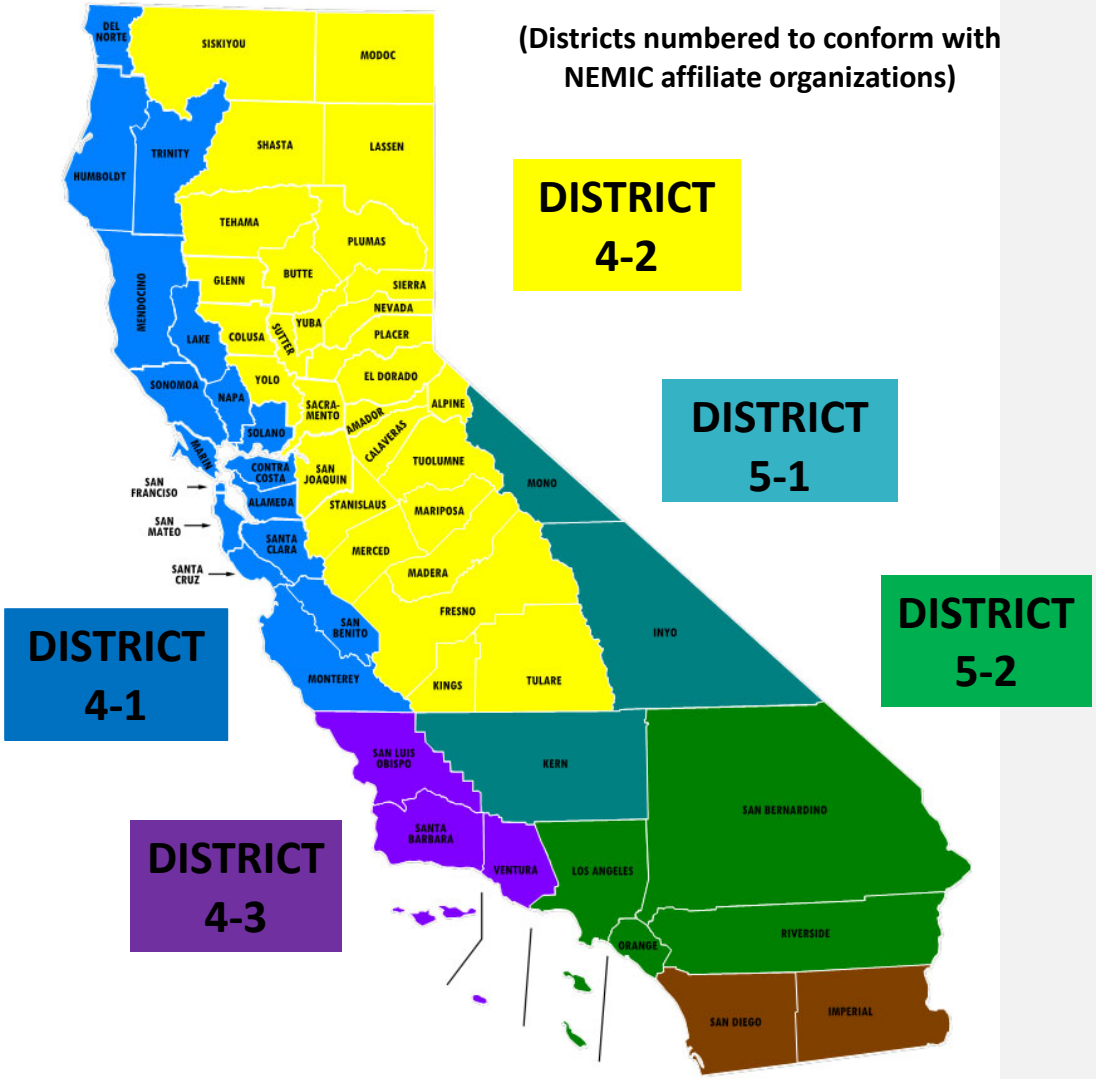
Existing NEMIC-certified ATTs are now identified as MATT Level 2. The map on the following page shows the regions of California covered by:

- Existing NEMIC ATT-certified technicians (now identified as MATT Level 2).
- SMART Apprentices in the state by training center regions (all to become at least MATT Level 1 with some becoming MATT Level 2)
- SMART Journeypersons in the state by region (potential MATT Level 1 or 2)

As of June 2022, there were 224 NEMIC-certified MATT Level 2s (previously identified as ATTs), 420 NEMIC-certified MATT Level 1s, approximately 2500 SMART HVAC apprentices who are eligible to become certified MATTs over the next 3 years, and approximately 7000 SMART HVAC journeypersons eligible to become certified MATTs.

NEMIC ATTCP DISTRICTS

(Districts numbered to conform with NEMIC affiliate organizations)



DISTRICT 4-2

DISTRICT 5-1

DISTRICT 5-2

DISTRICT 4-1

DISTRICT 4-3

DISTRICT 6-1

3.6 Industry Coverage

This section addresses Title 24, Part 1, Section 10-103.2(b)2. *Industry Coverage by Certification Provider(s)*.

To gain ANSI accreditation under ANSI/IEC/ISO 17024, NEMIC must demonstrate that any prequalified member of the HVAC industry, including but not limited to HVAC installing and servicing contractors, mechanical contractors, TAB contractors, controls contractors, commissioning agents, and professional engineers, are able to become participants of NEMIC. Given that NEMIC has and will continue to operate as an ANSI-accredited personnel certification provider, industry coverage is assured as mandated by Title 24, Part 1, Section 10-103.2 (b)2.

4 Complaint Procedures

In accordance with CCR Title 24 Part 1 Section 10-103.2(c)3D, this Section documents how NEMIC will implement procedures for notifying building departments and the public that NEMIC will accept complaints regarding the performance of any certified ATT or ATE, and procedures for how the NEMIC will address these complaints.

This section was previously submitted on 27 February 2015 and approved by the CEC on March 11, 2015.

The Complaint Procedure is fully documented in the Certification Manual, Section 2.6 *ATTCP Procedures for Resolution of Complaints* (see Attachment 2.1). The ATTCP website provides a guideline for how to submit a complaint regarding conduct or performance of a NEMIC-certified ATT or ATE.

5 Revocation Procedures

In accordance with CCR Title 24 Part 1 Section 10-103.2(c)3E, this Section documents how NEMIC will implement procedures for revoking the certification of ATTs and ATEs based upon poor quality or ineffective work, failure to perform acceptance tests, falsification of documents, failure to comply with the documentation requirements of these regulations for the issuance of building permits, or other specified actions that justify decertification.

This Section was previously submitted on 27 February 2015 and approved by the CEC on March 11, 2015.

The Revocation Procedures are fully documented in the Certification Manual, Section 2.4 *Suspension or Withdrawal of Certification,* Section 3.7 *Decertification* (of Technicians) and Section 4.8 *Decertification* (of Employers) (see Attachment 2.1).

6 Quality Assurance Program (QAP)

In accordance with CCR Title 24 Part 1 Section 10-103.2(c)3F, this Section documents that the NEMIC certification practices include quality assurance, independent oversight and accountability measures such as third party oversight of the certification processes and procedures, visits to building sites where certified technicians are completing acceptance tests, certification process evaluations, building department surveys to determine acceptance testing effectiveness, and expert review of the training curricula developed for Title 24, Part 6 Building Energy Efficiency Standards, Section 120.5.

This Section was previously submitted as a stand-alone document with the NEMIC ATTCP 2016 Update Report and was approved by the CEC on June 13, 2018. The only Substantive Changes to this Section with the 2019 Application Amendment are: *Table 6.5, Results of Audit Failure*, which was adjusted to better align with the CEC-approved practices of other ATTCPs; more detailed descriptions of the Desk and On-site Sampling Auditing processes; and a sample of acceptance test forms to be completed on the NEMIC ATTCP Project Database.

Summary of NEMIC Method of Compliance

6.1 Scope

All NEMIC ATTCP-certified ATEs and ATTs must participate in the NEMIC ATTCP QAP. To administer the NEMIC QAP, NEMIC has hired an independent third party, ICF Inc.

6.2 Conformance to NEMIC ATTCP Code of Conduct

All technicians and employers certified by NEMIC under CCR Title 24 Part 1, Sections 10-102 and 10-103.2 are expected to practice their profession consistent with the procedures applicable to the certification, and the highest quality work and to adhere to the NEMIC ATTCP *Code of Conduct* at all times (see NEMIC ATTCP Certification Manual, Section 4.7 *Employer Certification Obligations and Code of Conduct*).

All NEMIC ATTCP-certified ATTs must maintain their NEMIC ATT certifications at all times. Additionally, NEMIC MATT Level 2 Certificants must maintain their TABB Technician certification at all times. Failure to maintain the MATT Level 1 certification shall result in immediate loss of the NEMIC MATT Level 1 Certification. Failure to maintain both the NEMIC MATT Level 2 and ICB TABB Technician certification shall result in immediate loss of the NEMIC ATTCP MATT Level 2 certification. The ATT must adhere to the *Technician Certification Obligations and Code of Conduct* as described in the Certification Manual, Section 3.8, at all times.

NEMIC ATTCP-certified ATEs must maintain a system of quality controls governing their operations. These are the procedures employers implement that help ensure the delivery of quality services to customers and include clearly established protocols and best practices for the work. NEMIC ATTCP certified ATEs must adhere to the following policies and procedures.

6.3 Employ NEMIC-Certified ATTs

NEMIC ATTCP-certified ATEs agree to employ NEMIC-certified ATTs in quantity and designation for the scope of the business operation at each location sufficient to conduct testing to the Standards and to sign off on certificates of completion. NEMIC ATTCP-certified ATEs agree to use only NEMIC -certified ATTs for acceptance testing.

6.4 Equipment

NEMIC-certified ATTs must ensure that they have the necessary serviceable, calibrated tools, equipment, and instruments available for conducting mechanical acceptance testing work. Upon request, NEMIC-certified ATTs are required to provide diagnostic equipment and instrument calibration records. NEMIC does not mandate the purchase or ownership of any specific piece or brand or tool, equipment or instrument for purposes of certification. NEMIC may request and review an employer's tool and equipment inventory to determine whether the employer has the capability to be certified for mechanical acceptance testing as mandated by the Standards based on the tools, equipment, and instruments in the inventory.

6.5 Disclosure of Information

To verify the scope of the company's work, NEMIC ATTCP-certified ATEs will, upon request, provide NEMIC with access to certain records or data that substantiate ATT findings.

Based on the program parameters, a percentage of projects, chosen randomly, will receive either a document "desk" audit, or an on-site, in-person, quality-assurance audit. Each review will be based upon the following fee structure.

Table 6.1 ICF Audit Fee Structure

Type of Audit	Fee Paid to ICF
For Each Quality Assurance Desk Audit	**$300**
Per On-Site, In Person Quality Assurance Audit	**$950**

Desk Audit Process and On-Site Audit Process are described in **Section 6.10 Random Audit Sampling Process.**

6.6 General Appeals

Any and all objections with regard to the NEMIC QAP will be resolved according to the procedures set forth in the Manual Section 2.5 *Certification-Related Appeal Procedures*. All appeals will be categorized as General Appeals.

6.7 Audit Sampling Background

NEMIC and ICF have designed a quality assurance "audit" program utilizing best practices around a "quality assurance audit model." NEMIC follow the guidelines established by the American Institute of CPA's (AICPA) in the "*Audit Sampling Considerations of Circular A-133 Compliance Audits*" to address sampling size in an audit environment.

A-133 audits are required by the federal government and provide a statistically reliable method of quality assurance. In the "Audit Sample" chapter, AICPA recommends, "*If the auditor determines that internal control over compliance is effectively designed and implemented, Circular A-133 requires that the auditor plan the audit to support a low level of assessed control risk. This requires the auditor to plan to obtain a high level of assurance that controls operate as designed. Therefore, generally, samples for control tests are designed to achieve a 90 percent to 95 percent confidence level.*"

However, AICPA states that there are several inherent risk factors that could impact noncompliance, which included, specifically:

New program with little history with compliance requirement;

Complex processing or judgment;

Significant deficiencies or material weaknesses observed in the past;

Correspondence from program officials indicating potential problems;

Lack of adherence to applicable laws and regulations in prior years;

High auditee turnover in a particular area;

Very high volume of activity; and/or

Substantial change in the policies, processes, or personnel associated with the compliance requirement.

For new programs, it is recommended the audit program require a 98 percent confidence level at first to ensure that any initial issues with noncompliance are identified and addressed. Because the NEMIC QAP is a new program that will initially consist entirely of newly certified mechanical ATTs, ICF has set a goal of conducting enough quality assurance audits during the first 3 years of the program to have a 98% confidence level that all acceptance test assessments are done correctly. As the program becomes more established and the NEMIC ATTCP-certified ATT workforce becomes more experienced, these quality assurance visits will decrease to a 95% confidence level in years 3-5 and then a 90% confidence level in year 5 and beyond. The confidence levels for the program are described in the table below.

Table 6.2. Confidence Levels of the NEMIC QAP

Time Period	Confidence Level
2016/2019 Code	**98%**
2022 Code and Beyond	**95%**

The formula for determining the appropriate confidence level is:

$$p \pm z * \sqrt{\frac{p\,(1-p)}{n}}$$

Where:

p = percentage estimator
z = z-Score or standard score which is the number of standard deviations above the mean
n = sample size

As requested by the CEC staff, NEMIC, in its role as a mechanical ATTCP, will conduct two types of audits: a document "desk" audit and an on-site quality assurance audit. Table 3 shows the type and frequency of audits to be conducted under the NEMIC QAP.

Table 6.3. Type and Frequency of Audits to Be Conducted Under the NEMIC QAP

Time Period	Confidence Level	% of Projects Audited*	Desk Audits	On-Site Audits
2016/2019 Code Cycle	**98%**	**4%**	**3%**	**1%**
2022 Code Cycle and Beyond	**95%**	**2%**	**1%**	**1%**

*the actual number of projects audited will depend on the total number of projects. NEMIC anticipates a minimum pool of 8,000 projects in the course of a year based on the number of CALCTP audits conducted in 2017.

ICF will use the following formula to determine the appropriate sample size:

$$n = \left[\frac{z\,\sigma}{E}\right]^2$$

Where

n = sample size
z = z-Score which is determined by the confidence level
Φ =1-standard deviation
E = Estimate of error

NEMIC's third party QAP provider, ICF, will contact the ATT and the ATE regarding a site audit. For on-site audits, ICF will conduct the audit simultaneously as the ATT is conducting the site's acceptance tests.

6.8 Failed Audit Item versus a Failed Acceptance Test

A "failed Audit Item" includes:

Failure to ensure appropriate documentation is available and complete;

Failure to conduct all or elements of a construction inspection

Failure to verify equipment information is posted, and

Failure to verify installed mechanical controls are certified to the CEC.

A "failed acceptance test" occurs when at least one of the Threshold Specifications for the equipment being tested is not met during the testing and inspection process. "Threshold Specifications" is a set of specific pass/fail criteria for each mechanical control device or system requiring acceptance testing. A description of failed items and test failures per the mechanical acceptance test forms are listed in Sections 6.11 and 6.12.

6.9 Auditor Qualifications

All audits, desk and on-site, will be performed by NEMIC-certified ATTs.

6.10 Random Audit Sampling Process

If an ATT has failed either a desk quality assurance audit or an on-site-quality assurance audit, the NEMIC ATTCP-certified ATT will receive additional quality assurance oversight. As opposed to the anticipated percentage referenced above, ATTs who fail a quality assurance audit will receive scrutiny as listed in Table 6.5.

Table 6.4. Results of Audit Failure

Result	Action That Will Be Taken
Minor infraction	**Warning issued (ATE and ATT)**
Failed either a desk or on-site quality assurance audit	**Targeted retraining and re-examination (ATE or ATT)**
Failed a second desk or on-site quality assurance audit	**Decertification (ATE or ATT) with the option to restore certification with the successful completion of the full training and examination requirements.**

Desk Audit Process

1) The third-party auditor will have access through a refined auditor user role to the NEMIC ATTCP project database.
2) On a weekly basis, the auditor will run a report on all projects completed to date and projects completed from the past week.
3) If an ATT is due for an audit, the auditor will randomly select a project with forms completed by the ATT. The auditor will review the NRCC forms and project documentation to assure compliance with the approved plans.
4) A notification will be sent to the ATT and ATE explaining that the desk audit has been conducted, with the desk audit fee to be paid by the employer employing the ATT and ATE regardless of the audit outcome.

On-Site Audit Process

1) The third-party auditor will have access through a defined auditor user role to the NEMIC ATTCP project database.
2) On a weekly basis, the auditor will run a report on all projects completed to date, projects completed from the past week, and projects anticipated to be in progress.
3) If an ATE is due for an audit, a notification will be sent to the ATT and ATE to confirm the status of anticipated project and that an on-site audit is pending. The notice will be given no later than one week prior to the on-site audit. Any corrections to anticipated project dates must be declared to the auditor within two days of the on-site audit notification. From the anticipated projects, the auditor will randomly select a project for the on-site audit.
4) The on-site audit will be performed at the same time that the ATT performs the acceptance testing, including review of the NRCC forms and project documentation to ensure compliance with the approved plans.
5) Failure by the ATE to provide the auditor with correct anticipated project dates will be reported as a failed audit. For example, it constitutes a failed audit if the auditor arrives at the project site at the scheduled date and time and the ATT is not present. Additionally, the ATE and the ATT are jointly and severely liable for the fee for an on-site audit regardless of the audit outcome.

The NEMIC ATTCP reporting process of the on-site audits will be as follows:

1) The auditor will send a completed electronic copy of the audit results to the ATE/ATT and the NEMIC ATTCP.
2) The auditor will track the results of all audits in an audit database maintained by the auditor and share with the NEMIC ATTCP any and all data required for its annual report to the CEC.
3) The auditor will keep electronic copies of the audit findings and reports for a period of five years.

NEMIC maintains a separate project database of all accounts, for both ATTs and ATEs, including any pertinent project documentation. Copies of completed projects, completed mechanical acceptance tests, i.e., NRCA-MEC-X forms are kept for a minimum of five years.

6.11 Identifying Features of Acceptance Test Forms Completed on the NEMIC ATTCP Project Database

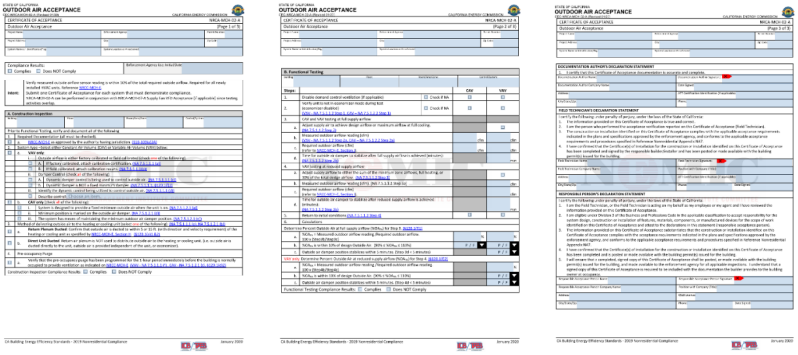
All acceptance test forms completed through the NEMIC ATTCP Project Database shall bear the following identifying features:

1) A watermark of the NEMIC acronym, name, and logo centered in the background of each page of each form.
2) The logo of the ICB/TABB brand, included at the bottom of each page of each form.

The identifying features are unique and exclusive to the acceptance test forms completed through the NEMIC ATTCP Project Database, shall be applied to all acceptance test forms

completed through the NEMIC ATTCP Project Database, and shall not be utilized for any acceptance test forms except those completed by NEMIC-certified ATTs and ATEs.

A sample form with stated identifying features is shown here:



6.12 Individual Acceptance Test On-site Audit Pass/Fail Criteria

The on-site audit pass/fail criteria are derived from the Appendix NA7.5 *Mechanical Systems Acceptance Tests* within the *Reference Appendices for the Building Energy Efficiency Standard* under which the project was permitted.

NA7.5.1 Outdoor Air (Document NRCA-MCH-02-A)

Construction Inspection Failure

The ATT failed to do any of the following:

1. Indicate method and equipment used to measure airflow during the functional test;
2. Attach the calibration certificate or field calibration results to the acceptance test document;
3. Review the operation sequences to ensure the system performs dynamic control of minimum outdoor air and reviews the installation to confirm all of the devices of that sequence are present;
4. Indicate the dynamic control method used to control OSA in the system and/or failed to indicate the method used to deliver outside air to the unit; or
5. Conduct a preoccupancy purge for the 1-hour period immediately before normal occupancy of the building per §120.1(c)2.

Functional Test Failure

The ATT failed to perform any of the following steps.

Step 1. Disable demand control ventilation, if applicable;
Step 2. Verify unit is not in economizer mode. Disable the air economizer, if applicable. The ATT needs to measure and document the outdoor air flow in one of the accepted ways. The

outdoor airflow rate needs to be confirmed within ten percent of what is found on mechanical plan check document NRCC-MCH-03-E Column M, or mechanical equipment schedules;
Step 3. Modify VAV boxes to achieve full design airflow. The ATT needs to:

- Document the supply airflow at full cooling on the acceptance document;
- Document VFD speed; VFDs should be at or near 60Hz;
- Document the measured outdoor air reading: Document the required outdoor airflow as found on mechanical plan, check document NRCC-MCH-03-E Column M, or mechanical equipment schedules; In the "Testing Calculation and Results" section of the acceptance document, confirm that measured outdoor air flow is within ten percent of design outdoor air flow rate;
- Document time for OSA damper to stabilize after the VAV boxes open on the acceptance document. Confirm that dampers stabilize within five minutes.

Step 4. Drive all VAV boxes to either the minimum airflow, full heating airflow, or 30 percent of total design airflow. The ATT needs to:

- Document the supply airflow on the acceptance document;
- Document VFD speed;
- Document the measured outdoor air reading: In the "Testing Calculation and Results" section of the acceptance document, confirm that measured outdoor air flow is within ten percent of design outdoor air flow rate found on mechanical plan check document NRCC-MCH-03-E Column M, or mechanical equipment schedules.
- Document time for OSA damper to stabilize after the VAV boxes open on the acceptance document: Confirm that dampers stabilize within 5 minutes; The intent is to ensure the PID control loops are tuned properly.

NA7.5.2 Constant Volume, Single-Zone, Unitary Air Conditioner and Heat Pumps Systems Acceptance (Document NRCA-MCH-03-A)

Construction Inspection Failure:

The ATT failed to perform any of the following steps:

1. Verify the thermostat, or temperature sensor, is within the zone that the respective HVAC system serves;
2. Verify the thermostat is wired to the HVAC unit correctly. In particular, ensure that multiple stage terminals (that is, first and second stage wires) on the thermostat, both cooling and heating stages, are wired to the corresponding circuits at the HVAC unit;
3. Verify no factory-installed or field-installed jumpers exist across the first and second stage cooling terminals at the unit;

4. Verify on heat pumps the "O" terminal on the thermostat is wired to the reversing valve at the unit. The ATT also fails to verify the thermostat dip switch or programmable software is set to heat pump;
5. Verify the thermostat meets the temperature adjustment and dead band requirements of §120.2(b): The thermostat shall allow a heating set-point of 55°F or lower and a cooling set-point of 85°F or higher. The dead band shall be at least 5°F, where heating and cooling is shut off. On the acceptance document MECH-04A, note the minimum heating set-point, maximum cooling set-point, and dead band;
6. Verify occupied, unoccupied, and holiday schedules have been programmed per the schedule of the facility; or
7. Verify the preoccupancy purge has been programmed to meet the requirements of §120.1(c)2.

Functional Test Failure

The ATT failed to follow any of the following steps:

Step 1. Disable economizer control and demand-controlled ventilation systems to prevent unexpected interactions.

Step 2. Simulate a heating demand during occupied condition and verify:

- Supply fan operates continually during occupied condition.
- Ensure all available heating stages operate; the heater stages on.
- No cooling is provided by the unit and outdoor air damper is open to minimum ventilation position

Step 3. Simulate operation in the dead band (no-load condition) during occupied condition. Verify and document that

- Supply fan operates continually during occupied condition;
- Heating and cooling are not provided by the unit; and
- Outdoor air damper is open to minimum ventilation position.

Step 4. Simulate a cooling demand during occupied condition. Verify and document that

- Supply fan operates continually during occupied condition;
- All available cooling stages operate; the compressor stages on;
- No heating is provided by the unit; and
- Outdoor air damper is open to minimum ventilation position.

Step 5. Simulate operation in the dead band (no-load condition) during unoccupied condition. Verify and document that

- Supply fan shuts off during unoccupied condition;
- Unit does not provide heating or cooling; and

- Outdoor air damper is fully closed.

Step 6. Simulate heating demand during unoccupied condition. Verify and document that

- Supply fan cycles on with call for heating;
- Heating is provided by the unit; heater stages on;
- No cooling is provided by the unit; and
- Outdoor air damper is either fully closed or at minimum position

Step 7. Simulate cooling demand during unoccupied condition. Verify and document that

- Supply fan cycles on with call for cooling;
- No heating is provided by the unit;
- Cooling is provided by the unit; and
- Outdoor air damper is either fully closed or at minimum position.

Step 8. Simulate manual override during unoccupied condition. The ATT needs to:

- Verify and document that the system reverts back to an "occupied" condition. For a DDC control system, verify the "active" heating and cooling set-points correspond to those programmed for the occupied condition. For a programmable thermostat, the thermostat may display that it is in the "occupied" mode;
- Verify and document that that the system reverts back to an "unoccupied" condition when manual override period expires. It may be necessary to adjust the length of the override period to minimize test time;
- Check that the supply fan operates continually during occupied condition; and
- Check that outside air damper is open to minimum ventilation position.

NA7.5.3 Air Distribution Systems Acceptance (Document NRCA-MCH-04-A)

Construction Inspection Failure

The ATT failed to review the drawings and construction to verify that the following items are specified in the construction set and installed in the field:

- Draw-bands are either stainless steel worm-drive hose clamps or UV-resistant nylon duct ties. Verify compliance by reviewing material cut sheets and visual inspection;
- Flexible ducts are not constricted in any way;
- Joints and seams are not sealed with a cloth-backed rubber adhesive tape unless used in combination with mastic and draw-bands;
- Duct insulation R-value shall comply with §120.4(a), §120.4(c), and §120.4(d) and can be verified by reviewing material cut sheets and through visual inspection; and
- Insulation is protected from damage or is suitable for outdoor usage, per §120.4(f). Compliance is verified by reviewing material cut sheets and through visual inspection.

Functional Test Failure

The ATT failed to follow any of the steps below:

For **new duct systems**, the ATT blocks all the supply and return registers and diffusers. Then, the ATT pressurizes the ducts with a fan flowmeter to a positive 25 Pa (0.10 inches of water) and record the leakage airflow measured by the fan flowmeter. This measured leakage is divided by the total fan flow to generate the leakage percentage value. When this leakage percentage is less than or equal to 6 percent, the system passes.

For **existing duct systems** needing additional ducts added, undergoing major repairs, or having equipment replaced that connects to the ducts, the ATT tests the leakage rate of the existing duct system first before proceeding with any alterations. This leakage amount is the pretest leakage value. Next, the ATT proceeds with the test method described above for new duct systems to measure the final test leakage rate, with the only exception that the maximum leakage allowed is increased to 15 percent.

After completing the air distribution system acceptance test, the ATT affixes a sticker to the air handler access door describing whether the system met the prescriptive leakage requirements (6 percent leakage for new systems and 15 percent for existing systems) or if the system failed to meet this standard but all accessible leaks were sealed.

NA7.5.4 Air Economizer Controls Acceptance (Document NRCA-MCH-05-A)

Construction Inspection Failure

The ATT failed to follow any of these steps:

1. Check that the air economizer outside (lockout) sensor location is adequate to achieve the desired control and prevent false readings;
2. Check the economizer reliability features are present per §140.4(e)4. This includes the following:
   - Verify the economizer has a 5-year warranty of the assembly.
   - Provide a product specification sheet proving economizer assembly capability of at least 60,000 actuations;
   - Provide a product specification sheet proving economizer damper sections are certified by AMCA 511 for a maximum damper leakage rate of 10 cfm/sf at 1.0 in. w.g. (Class 1A, 1, and 2 are acceptable);
   - If the high limit set-point is fixed dry-bulb or fixed enthalpy + fixed dry-bulb, then the control shall have an adjustable set-point.
   - Outdoor air, return air, mixed air, and supply air sensors shall be calibrated as follows:
     - ✓ Dry-bulb and wet-bulb temperatures accurate to ±2°F over the range of 40°F to 80°F.
     - ✓ Enthalpy accurate to ±3 Btu/lb. over the range of 20 Btu/lb. to 36 Btu/lb.
     - ✓ Relative humidity (RH) accurate to ±5 percent over the range of 20 percent to 80 percent RH.

- Check that the sensor performance curve(s) is provided by the factory with economizer instruction materials, and that sensor output values measured during sensor calibration are plotted on the performance curve(s);
- Check that the sensors used for high limit control are located so as to prevent false readings, including, but not limited to, being properly shielded from direct sunlight;
- For unitary systems 65,000 Btu/hr or less, verify that a two-stage thermostat is used, and that the system is wired so that the economizer is the first stage of cooling and the compressor is the second stage;
- Check that all systems have some method of relief to prevent over pressurization of the building when in full economizing mode (100 percent outdoor air); and
- For systems with DDC controls, check that lockout sensor(s) are either factory calibrated or field calibrated. For systems with non-DDC controls, check that manufacturer's startup and testing procedures have been applied.

Functional Test Failure

The ATT failed to perform any of the following steps:

Steps for Stand-Alone Package – Trane Voyager and Precedent Series

Step 1. Disable demand control ventilation (DCV) system mode.

Step 2. Use internal test sequences to enable operating modes.

- 1st jumper – supply fan is enabled
- 2nd jumper – economizer mode is enabled
- 3rd jumper – compressor is enabled
- 4th jumper – heating stage is enabled

Verify and document that

- The outdoor air damper opens completely and the return damper closes completely during economizer mode;
- The outside air damper remains 100 percent open while using mechanical cooling when the demand cannot be met by outside air alone and the system is still below the lockout point;
- Outdoor air damper is at minimum position when the supply fan is enabled;
- Outdoor air damper is at minimum position when the compressor is enabled and economizing is disabled;
- Outdoor air damper is at minimum position when heating is enabled and economizing is enabled; and
- The mixed/discharge cut-out sensor wire is landed on the SA terminal on the OEM board. If the sensor wire is not landed on the SA terminal, the economizer will not operate.

Step 3. Turn off the unit and verify that

- Economizer dampers close completely.

- Return air damper opens.

Step 4. Return system to normal operation.

After restoring power, the unit returns to normal operation, verifying the final economizer changeover dip-switch settings comply with Energy Standards Table 140.4-B per §140.4(e)3.

Honeywell Controllers

Step 1. Disable demand-controlled ventilation (DCV) system modes;

Step 2. Simulate a cooling load and enable the economizer; Verify and document that

- Outdoor air dampers open fully; Adjust linkages, if necessary, to ensure dampers are at the desired position;
- Return air dampers close completely; Adjust linkages, if necessary, to ensure dampers are at the desired position; and
- Compressor runs when cooling load becomes too high for economizing to meet alone: The outdoor air dampers should remain 100 percent open at this point;

Step 3. Simulate a cooling load and disable the economizer. Verify and document that

- Outdoor air dampers close to minimum position: Adjust linkages, if necessary, to ensure dampers are at the desired position;
- Return air dampers open completely: Adjust linkages, if necessary, to ensure dampers are at the desired position; and
- The compressor operates.

Step 4. If the unit is equipped with heating, simulate a heating load with the economizer enabled; Verify and document that

- Outdoor air dampers remain at minimum position;
- Heating is enabled; and
- The compressor does not operate.

Step 5. Turn off unit; Verify and document that

- Economizer dampers close completely;
- Return air damper opens.

Step 6. Return system back to normal operating condition; Verify and document that the final economizer changeover setting (A, B, C, D) complies with Energy Standards Table 140.4-B per §140.4(e)3.

Carrier Durablade

Step 1. Disable demand-controlled ventilation (DCV) system modes, if applicable to the unit.

Step 2. Simulate a cooling load and enable the economizer; Verify and document that

- Damper blade slides completely across the return air duct, and mixed air plenum is open to the outdoor air intake. Adjust end switches as necessary to achieve the desired position; and
- The compressor does not run.

Step 3. Simulate a cooling load and disable the economizer; Verify and document that

- Damper blade returns to minimum outdoor air position; Adjust end switches as necessary to achieve the desired position; and
- The compressor operates;

Step 4. If the unit is equipped with heating, simulate a heating load with the economizer disabled; Verify and document that

- Economizer dampers close completely; and
- Return air damper opens.

Step 5. Turn off unit; Verify and document that

- Economizer dampers close completely;
- Heating and cooling do not operate.

Step 6. Return system back to normal operating condition; Verify and document that final economizer changeover setting complies with Energy Standards Table 140.4-B per §140.4(e)3

DDC Controls

Step 1. Disable demand controlled ventilation (DCV) system modes.

Step 2. Simulate a cooling load and enable the economizer; Verify and document that:

- Outdoor air damper modulates open to a maximum position;
- Return air damper modulates closed and is 100 percent closed when the outdoor air dampers are 100 percent open; and
- Outdoor air damper is 100 percent open before mechanical cooling is enabled.

Step 3. Simulate a cooling load and disable the economizer; Verify and document that

- Outdoor air damper closes to a minimum position;
- Return air damper opens to normal operating position when the system is not in economizer mode; and
- Mechanical cooling remains enabled to satisfy discharge air temperature set-point.

Step 4. If the system has heating, simulate a heating demand and enable the economizer; Verify and document that

- Outdoor air dampers remain at a minimum position;
- Return air dampers remain open;
- Heating is enabled to satisfy discharge air temperature set-point; and
- Mechanical cooling is disabled.

Step 5. Turn off all systems; Verify and document that

- Outdoor air dampers close completely; and
- Heating and cooling do not operate.

Step 6. Return system back to normal operating condition.

NA7.5.5 Demand Control Ventilation (DCV) Systems Acceptance (Document NRCA-MCH-06-A)

Construction Inspection Failure

The CO_2 sensor is either factory calibrated or field calibrated. A calibration certificate from the manufacturer will satisfy this requirement. If not, a field calibration is to be conducted. An ATT fails if neither of these inspections are performed.

Functional Test Failure

The ATT failed to follow any of the steps:

Step 1. Disable the economizer.
Step 2. Simulate a high space occupancy and verify the outdoor air damper modulates open.
Step 3. Simulate a low occupant density and verify the outdoor air damper modulates towards minimum position.

NA7.5.6 Supply Fan Variable Flow Controls Acceptance (Document NRCA-MCH-07-A)

Construction Inspection Failure

The ATT failed to perform any of the following steps:

1. Check that the static pressure sensor location, se point, and reset control meet the requirements of §140.4(c)2.
2. Verify the supply fan includes a means to modulate airflow such as a variable speed drive.
3. Perform a static pressure sensor(s) field calibration. When the value measured by the BAS is within 10 percent of the field-measured value, the sensor is calibrated.
    a. Attach supporting documentation to the NRCA-MCH-07-A document.

Functional Test Failure

The ATT failed to perform any of the following steps:

Step 1. Drive all VAV boxes to achieve full design airflow. The ATT needs to

- Verify and document the system full design airflow in cfm (e.g. from design documents);

- Check that supply fan speed modulates to increase capacity. For VFD, record fan motor frequency (Hz);
- For multi-zone systems, check that supply fan maintains discharge static pressure set point within ±10 percent of the current operating set point. Verification can be accomplished by simply reading the value measured by calibrated pressure sensor and comparing it to set point;
- When tests depart from NA7.5.1 (document NRCA-MCH-02-A), check if another method was used for verifying VFD operation (besides commanding to maximum flow and cooling); and
- Verify system operation and supply fan control stabilizes within 5 minutes.

Step 2. Drive all VAV boxes to a low airflow condition. Verify and document that

- Supply fan speed decreases to meet flow conditions. For VFD, record fan VFD frequency (Hz);
- For systems with DDC to the zone level, check that current operating static pressure set point has decreased;
- For multi-zone systems, check that supply fan maintains discharge static pressure set point within ± 10 percent of the current operating set point. Verification by comparing the value measured by calibrated pressure sensor to the set point; and
- System operation and supply fan control stabilizes within 5 minutes.

Step 3. Return system back to normal operating condition.

NA7.5.7 Valve Leakage Acceptance (Document NRCA-MCH-08-A)

Construction Inspection Failure

The ATT failed to follow any of the steps:

1. Collect the pump curve data and note the impeller size.
2. Ensure installation of all valve and piping arrangements is per the design drawings.
3. Confirm measuring devices are located adequately to achieve the most accurate results measurements.
4. Confirm piping arrangements are correct located.

Functional Test Failure

The MATT failed to follow any of the following steps:

Step 1. Dead head One Pump. Verify and Document:

Isolate one circulation pump and ensure all chillers (or boilers) are off. Close the isolation valve at the pumps discharge. Turn the pump on for no more than five minutes. Measure and note the pressure across the pump at this “dead head” condition. When the system is piped primary/secondary make sure there is a

secondary pump. At the end of the measurement, turn off the pump and re-open the discharge valve.

Step 2. Step 2: Close control valves. Verify and Document

Ensure each control valve closes completely under normal operating pressure. The intent is to confirm the actuator-valve torque requirements are adequate to shut the valve under normal operating system pressure. Verify complete closure by measuring the pressure across the operating pump. If the pressure is more than five percent less than the previous test, then any valves have not fully closed. Fix any leaks and retest.

NA7.5.8 Supply Water Temperature Reset Controls Acceptance (Document NRCA-MCH-09-A)

Construction Inspection Failure

The ATT failed to perform any of the following:

1. Verify if the temperature sensors were either factory calibrated or field calibrated by a controls contractor, or other appropriate person.
2. If field calibrated, did not provide supporting calibration documentation and attach to the NRCA-MECH-09-A document.

Functional Test Failure

The ATT failed to follow the steps below:

Step 1. Change reset control variable to its maximum value. Verify and document that

- Chilled and/or heating hot water supply temperature set-point is reset to the appropriate value determined by the designer per the control strategy.
- Actual supply water temperature changes to within 2 percent of the control set-point.

Step 2. Change reset variable to its minimum value. Verify and document that

- Chilled and/or heating hot water supply temperature set-point is reset to the appropriate value determined by the designer per the control strategy; and
- Actual supply water temperature changes to within 2 percent of the control set-point.

Step 3. Test automatic control of reset control variable to automatic control. Verify and document that

- Chilled and/or heating hot water supply set-point is reset to the appropriate value;
- Actual supply temperature changes to meet the set-point; and
- The supply temperature is within 2 percent of the control set-point.

NA7.5.9 Hydronic System Variable Flow Control Acceptance (Document NRCA-MCH-10-A)

Construction Inspection Failure

The ATT failed to follow any of the steps:

1. Verify the static pressure location, set point, and reset control must meet the requirements of the §140.4(k)6B;
2. Verify the differential pressure sensor (when applicable) is factory or field calibrated by a controls contractor or other qualified person. Field calibration requires measuring system pressure (or differential pressure), as close to the existing sensor as possible using a calibrated hand-held measuring device. All pressure sensors must be within 10 percent of the calibrated reference sensor; and
3. Provide supporting documentation which must be attached to the Acceptance Document NRCA-MCH-10-A.

Functional Test Failure

The ATT failed to follow any of the steps:

Step 1. Modulate control valves to reduce water flow to 50 percent of the design flow or less, but not lower than the pump minimum flow. Verify and document that

- Current pump operating speed decreased (for systems with DDC to the zone level);
- Current operating set-point has not increased (for all other systems that are not DDC);
- System pressure is within 5 percent of current operating set-point. Record the measured system pressure at the control sensor. Record the system pressure set point; and
- System operation stabilizes within 5 minutes after test procedures are initiated.

Step 2. Open control valves to increase water flow to a minimum of 90 percent design flow. Verify and document that:

- Pump speed increases to 100 percent;
- System pressure increases and is within 5 percent of current operating set-point, record the measured system pressure at the control sensor. Record the system pressure set point;
- System pressure set point is greater than the set-point recorded in step 1; and
- System operation stabilizes within 5 minutes after test starts.

Step 3. Restore system to initial operating conditions.

NA7.5.10 Automatic Demand Shed Control Acceptance (Document NRCA-MCH-11-A)

Construction Inspection Failure

The ATT failed to inspect that the EMCS interface was able to activate the central demand shed controls.

Functional Test Failure

The ATT failed to follow any of the following steps:

Step 1. Engage the global demand shed system. Verify and document that

- The cooling set-points in the non-critical spaces increase by the expected amount; and
- The cooling set-points in the critical spaces do not change.

Step 2. Disengage the global demand shed system. Verify and document that

- The cooling set-points in the non-critical spaces return to their original set-point; and
- The cooling set-points in the critical spaces do not change.

NA7.5.11 Fault Detection and Diagnostics (FDD) for Packaged Direct-Expansion (DX) Units Acceptance (Document NRCA-MCH-12-A)

Construction Inspection Failure

The ATT failed to verify the installed FDD has been certified to the CEC and is listed on the CEC's website.

Functional Test Failure

The ATT failed to follow any of the following steps

for each HVAC unit to be tested:

Test for Air Temperature Sensor Failure/Fault

Step 1. Verify the FDD system indicates normal operation;
Step 2. Disconnect outside air temperature sensor from unit controller. Verify and document that the FDD system reports a fault; and
Step 3. Connect outside air temperature sensor to unit controller. Verify and document that the FDD system indicates normal operation.

Test for Excessive Outside Air

After passing the tests described in NA7.5.1 Outdoor Air, verify FDD system indicates normal operation.

Test for Economizer Operation

Step 1. Interfere with normal unit operation to generate an Air Economizer Control failure by immobilizing the outdoor air economizer damper according to

manufacturer's instructions. After Air Economizer Controls fails, verify FDD system reports a fault.

Step 2. Successfully complete and pass tests described in NA7.5.4 Air Economizer Controls. Verify that the FDD system reports normal operation.

NA7.5.12 FDD for Air Handling Units and Zone Terminal Units Acceptance (Document NRCA-MCH-13-A)

Construction Inspection Failure

The ATT fails to test a minimum of 5 percent of the terminal boxes (VAV box) to any FDD system installed on an air handling unit or a zone terminal unit.

Functional Test Failure

Testing of each Air Handling Units with FDD controls

The ATT failed to follow the steps below:

1 Sensor Drift/Failure

The threshold for a sensor drift fault should be given in percentage of full range, or in units for each type of sensor (temperature, differential pressure / airflow rate, etc.):

Step 1. Disconnect outside air temperature sensor from unit controller;
Step 2. Verify the FDD system reports a fault;
Step 3. Connect OATT sensor to the unit controller; and
Step 4. Verify that FDD indicates normal system operation.

2 Damper/actuator fault

Step 1. From the control system workstation, command the mixing box dampers to full open (100 percent outdoor air), by lowering the supply air temperature set-point;
Step 2. Disconnect power to the actuator and verify that a fault is reported at the control workstation;
Step 3. Reconnect power to the actuator and command the mixing box dampers to full open by maintaining the supply air temperature set-point;
Step 4. Verify that the control system does not report a fault;
Step 5. From the control system workstation, command the mixing box dampers to a minimum position (0 percent outdoor air) by raising the supply air temperature set-point;
Step 6. Disconnect power to the actuator and verify that a fault is reported at the control workstation;
Step 7. Reconnect power to the actuator and command the dampers closed; and
Step 8. Verify that the control system does not report a fault during normal operation.

3 Valve/actuator fault

Step 1. From the control system workstation, command the heating coil valve to the fully open position by temporarily setting the space heating set-point higher than the current space temperature, if the system is not in heating mode;
Step 2. Disconnect power to the actuator and verify that a fault is reported;
Step 3. Reconnect power to the actuator and command the heating coil valve to full open;
Step 4. Verify that the control system does not report a fault;
Step 5. From the control system workstation, command the cooling coil valve to the fully open position by temporarily setting the space cooling set-point lower than the current space temperature, if the system is not in cooling mode;
Step 6. Disconnect power to the actuator and verify that a fault is reported;
Step 7. Reconnect power to the actuator and command the cooling coil valve to full open; and
Step 8. Verify that the control system does not report a fault.

Improper Mode Fault Tests

The ATT failed to follow the steps below:

Step 1. From the control system workstation, override the heating coil valve and verify that the control workstation reports a fault;
Step 2. From the control system workstation, override the cooling coil valve and verify that the control workstation reports a fault; and
Step 3. From the control system workstation, override the mixing box dampers and verify the control workstation reports a fault.

Terminal Unit (VAV box) Tests

The ATT failed to perform any of the following steps:

1 Sensor drift/failure

Step 1. Disconnect the tubing to the differential pressure sensor of the VAV box;
Step 2. Verify the control system detects and reports the fault;
Step 3. Reconnect the sensor and verify proper sensor operation; and
Step 4. Verify that the control system does not report a fault.

2 Damper/actuator fault – damper stuck open

Step 1. Command the damper to be fully open. Override the space temperature set-point below the current space temperature to force the system into maximum cooling. Another option is to command the VAV box to the maximum position through the control workstation;
Step 2. Disconnect the actuator to the damper;
Step 3. Adjust the cooling set-point such that the room temperature is below the cooling set-point to command the damper to the minimum position. Verify that the control system reports a fault; and
Step 4. Reconnect the actuator and restore to normal operation.

3 Damper/actuator fault – damper stuck closed

Step 1. Set the damper to the minimum position;
Step 2. Disconnect the actuator to the damper;
Step 3. Set the cooling set-point below the room temperature to simulate a call for cooling. Verify that the control system reports a fault; and
Step 4. Reconnect the actuator and restore all set-points to their original values to resume normal operation.

4 Valve/actuator fault (For systems with hydronic reheat)

This test is only applicable to systems with hydronic reheat.

Step 1. Command the reheat coil valve to (full) open by setting the heating set-point temperature above the space temperature set-point; Wait for the controls to respond to the command to open the reheat coil valve;
Step 2. Disconnect power to the actuator; Set the heating set-point temperature to be lower than the current space temperature, to command the valve closed. Verify that the fault is reported at the control workstation; and
Step 3. Reconnect the actuator and restore all set-points to their original values to resume normal operation.

5 Feedback loop tuning fault

Step 1. Set the integral coefficient of the box controller (reset action) used for airflow control to a value 50 times the current value. Reduce the space temperature set-point to be 3°F below the current space temperature to simulate a call for cooling;
Step 2. Verify the damper cycles continuously over a period of several minutes. (The cycling period time depends on the type of controller used but is typically on the order of a few minutes.) Verify that the control system detects and reports the fault; and
Step 3. Reset the integral coefficient of the controller to its original value and reset the space set-point to its original value to restore normal operation.

6 Disconnected inlet duct

Step 1. From the control system workstation, command the damper to a minimum position (full closed) by raising the space temperature set-point;
Step 2. Then disconnect power to the actuator and verify that a fault is reported at the control workstation; and
Step 3. Reset the space temperature set-point back to its original value.

7 Discharge air temperature sensor

Step 1. Adjust zone set points to drive the box from dead band to full heating;
Step 2. Verify the supply air temperature resets to the maximum set point while the airflow maintains at the dead band flow rate; and

Step 3. Verify that the airflow rate increases to the heating maximum flow rate to meet the heating load.

NA7.5.13 Distributed Energy Storage DX AC System Acceptance (Document NRCA-MCH-14-A)

Construction Inspection Failures

The ATT failed to perform any of the following steps:

1. Verify the water tank is filled to the proper level;
2. Verify the water tank is sitting on a foundation with adequate structural strength to support the weight of the filled vessel;
3. Verify the water tank is insulated and the top cover is in place;
4. Verify the DES/DXAC is installed correctly (refrigerant piping, etc.); and
5. Verify the correct model number is installed and configured.

Functional Test Failure

The ATT failed to follow any of the steps below:

Step 1. Simulate cooling load during daytime period. Verify and document that

- The supply fan operates continually;
- If the system has ice storage, verify that the DES/DXAC runs in ice melt mode and that the compressor remains off. The supply fan operates continuously to provide cooling to the space. The refrigerant pump operates to circulate refrigerant to the evaporator coil(s); and
- If the DES/DXAC system has no ice and there is a call for cooling, verify that the DES/DXAC system runs in direct cooling mode, with the compressor running. Verify that cooling is provided to the space.

Step 2. Simulate no cooling load during daytime conditions. Verify and document:

- Supply fan operates as per the facility thermostat or control system; and
- The DES/DXAC and the condensing unit do not run.

Step 3. Simulate no cooling load during the morning shoulder time period (before noon). Verify and document that the DES/DXAC system remains idle;
Step 4. Simulate a cooling load during the morning shoulder time period (between 6 am and noon). Verify and document that:

- The DES/DXAC system runs in direct cooling mode, with the compressor running; and
- The tank does not discharge during this period.

Step 5. Set the date and time back to the current date and time after completion of the acceptance tests, following manufacturer's instructions.

NA7.5.14 Thermal Energy Storage (TES) System Acceptance (Document NRCA-MCH-15-A)

Construction Inspection Failures

ATT fails to verify the following chiller information is provided on the plans to document the key TES System parameters:

1. Chiller(s)
   - Manufacturer Brand and Model
   - Type (Centrifugal, Reciprocating, etc.) and quantity
   - Heat rejection type (air, water, other)
   - Charge mode capacity (tons) at average fluid temperature
   - Discharge mode capacity (tons) at temperature
   - Discharge mode efficiency (kW/ton or EER) at design ambient temperature
   - Charge mode efficiency at nighttime design ambient temperature (kW/ton or EER)
   - Fluid type and percentage (nameplate)
2. Storage
   - Type (Ice-on-Coil Internal Melt, Ice-on-Coil External Melt, Encapsulated (e.g. ice balls), Ice Harvester, Ice Slurry, Other Phase Change Material (e.g. paraffin), Chilled Water, Brine (or chilled water with additives), Eutectic Salt, Clathrate Hydrate Slurry (CHS) Cryogenic, Other (specify)
   - Brand and Model
   - Number of Tanks
   - Height/width/depth, or height/diameter (if custom tanks)
   - Storage capacity per tank (ton-hours) at entering/leaving temperatures and hours discharged
   - Storage rate (tons) at flow rate (gpm) per tank
   - Minimum charging temperature based on chiller and tank selections
   - Discharge rate (tons) at entering/leaving temperatures and hours discharged

Functional Test Failure

The ATT failed to follow any of the steps:

Step 1. TES System Design Verification. The MATT verifies the installing contractor certified the following information:

- Chiller(s) start-up procedure has been completed.
- System fluid test and balance has been completed.
- Air separation and purge has been completed.
- Fluid (e.g. glycol) has been verified at the concentration and type indicated on the design documents.

- The TES system has been fully charged at least once and charged duration noted.
- The system has been partially discharged at least once and discharged duration noted.
- The system is in partial charge state in preparation for Step 2.
- Schedule of operation has been activated as designed.
- Mode documentation describes the state of system components in each mode of operation.

Step 2. TES System Controls and Operation Verification. The MATT shall verify the following information:

- The TES system and the chilled water plant is controlled and monitored by an EMS.
- The system has controls in place configured for the operator to manually select each mode of operation or use an EMS schedule to specify the mode of operation.
- The scheduled operations listed below, not the times when the system will be in each mode of operation:
  - ✓ **Storage/charge mode**. Manually select storage mode. Verify that the TES system stores energy. If the TES operates on a schedule, note the times, what causes the TES to engage, and that the TES system enters energy storage mode.
  - ✓ **End of charge signal**. Simulated a full storage charge by changing the thermal storage manufacturer's recommended end of charge output sensor to the EMS. Verify that the storage charging stops.
  - ✓ **Discharge Mode**. Simulate a call for cooling. Manually select storage only discharge mode. Verify that the TES system starts discharging with the compressors off. Return to the off/secured mode. If the TES operates on a schedule, note times, what causes the TES to engage, and that the TES system starts discharging with the compressor(s) off.
  - ✓ **Mechanical cooling only mode**. Simulate a call for cooling. Manually select mechanical cooling only mode and verify that the storage does not discharge, and the cooling load is met by the compressor(s) only. Return to the off/secured mode. If the TES operates on a schedule, not the times, what causes the TES to engage, and that the storage does not discharge, and the cooling load is met by the compressor(s) only.
  - ✓ **Discharge and mechanical cooling mode**. Simulate a call for cooling. Manually select discharge and mechanical cooling mode. Verify that the TES system discharges with the chiller(s) sharing the load. Return to the off/secured mode. If the TES operates on a schedule, not the times, cause the TES to engage, and verify that the storage starts discharging with the compressor(s) sharing the load.

- ✓ **Off/storage-secured mode**. Manually select the off/storage-secured mode. Verify that the storage does not discharge, and all compressors are off. If the TES operates on a schedule, note the times, what causes the TES to engage, and that the storage does not discharge and all compressor(s) are off, regardless of the presence of calls for cooling.
- ✓ **Charge plus cooling mode**. If the provisions for this mode have been made by the system designer, verify that the tank(s) can be charged while serving an active cooling load, simulated by generating a call for cooling and entering the charge mode either manually or by time schedule. If the system disallows this mode of operation, verify that energy storage is disallowed or discontinued while an active cooling load is present.

NA7.5.15 Supply Air Temperature Reset Controls Acceptance (Document NRCA-MCH-16-A)

Construction Inspection Failures

The ATT failed to follow any of the steps:

1. Verify supply air temperature reset controls are installed per the requirements of the 2016 Energy Standards §140.4(f);
2. Document all system air temperature sensor(s) are factory or field calibrated; or
3. Document the current supply air temperature.

Functional Test Failure

The ATT failed to follow any of the steps:

Step 1. During occupied mode, adjust the reset control parameter to decrease the supply air temperature (to the lower supply temperature limit). Verify and document that:

- Supply air temperature controls modulate as intended;
- Actual supply air temperature decreases to meet the new set point within +/- 2°F;
- Supply air temperature stabilizes within 15 minutes; and
- Document both supply air temperature set-point and actual supply air temperature.

Step 2. During occupied mode, adjust the reset control parameter to increase the supply air temperature (to the upper supply temperature limit). Verify and document that:

- Supply air temperature controls modulate as intended;
- Actual supply air temperature decreases to meet the new set point within +/- 2°F;
- Supply air temperature stabilizes within 15 minutes; and

- Document both supply air temperature set-point and actual supply air temperature.

Step 3. Restore reset control parameter to automatic control. Verify and document:

- Supply air temperature controls modulate as intended;
- Actual supply air temperature decreases to meet the new set point within +/- 2°F. Document both supply air temperature set-point and actual supply air temperature; and
- Supply air temperature stabilizes.

NA7.5.16 Condenser Water Temperature Reset Controls Acceptance (Document NRCA-MCH-17-A)

Construction Inspection Failures

The ATT failed to follow any of the steps:

1. Check if the condenser water supply system and control system are installed per the system design, as documented on the building plans or as-builts;
2. Check if condenser water supply temperature control sequence, including condenser water supply high and low limits, are available and documented in the building documents;
3. Check if all cooling tower fan motors are operational, cooling tower fan speed controls are installed, operational, and connected to cooling tower fan motors per OEM start-up manuals and sequence of operation;
4. Check if cooling tower fan control sequence, including tower design wet bulb temperature and approach, are available and documented in the building documents;
5. Check if the following temperature sensors are installed per plans: outdoor air dry-bulb and wet-bulb, entering condenser water, and leaving chilled water. Note any discrepancies on the Acceptance Document;
6. Check all ambient dry bulb temperature, and relative humidity/wet bulb sensors used by controller must be factory calibrated (with certificate), field calibrated by TAB technician or other technician (with calibration results), or field checked against a calibrated reference standard by test technician (with results). Attach supporting documentation to the Acceptance Document. When field calibrating temperature sensors, it is recommended that you perform a “through system” calibration that compares the reference reading to the reading at the EMCS front end or inside the controller (e.g. it includes any signal degradation due to wiring and transducer error); and
7. Document the following from the control system or using test sensors:
   - Current outdoor air dry bulb and wet bulb temperatures
   - Current entering condenser water supply temperature
   - Current leaving chilled water temperature

Functional Test Failure

The ATT failed to follow any of the steps:

Step 4. Adjust the reset control parameter to decrease the condenser water temperature (toward the lower supply temperature limit). Verify and document:
- Condenser water temperature controls modulate as intended;
- Actual condenser water supply temperature decreases to meet new set point within ± 2°F;
- Cooling tower fan(s) stage properly and/or adjust speed accordingly to meet lower set point; and
- Chiller load amps decrease.

Step 5. Adjust the reset control parameter to increase the condenser water temperature (toward the upper supply temperature limit). Verify and document:
- Condenser water temperature controls modulate as intended;
- Actual condenser water supply temperature increases to meet new set point within ± 2°F;
- Cooling tower fan(s) stage properly and/or adjust speed accordingly to meet upper set point; and
- Chiller load amps increase.

Step 6. Restore reset control parameter and system to automatic control. Verify and document:
- Condenser water temperature controls modulate as intended;
- Actual condenser water supply temperature changes to meet new set point within ± 2°F;
- Cooling tower fan(s) stage properly and/or adjust speed accordingly to meet set point; and
- All equipment returns to normal operation.

Energy Management Control System Acceptance (Document NRCA-MCH-18-A)

Construction Inspection Failures

The ATT failed to ensure that all of the following actions have been completed:

1. Factory start-up and check-out complete
2. I/O point lists available
3. Point-to-point verification completed
4. Sequence of operations of each system are programmed
5. Written sequences are available
6. Input sensors are calibrated

NA7.5.17 Occupied Standby Acceptance (Document NRCA-MCH-19-A)

Construction Inspection Failures

The ATT failed to ensure that all of the following actions have been completed:

1. Confirm that all spaces served by the zone are eligible to be in occupied standby mode
2. Verify that the occupant sensor is placed so that it can detect occupants in the space without obstruction.
3. Confirm that the mechanical system is controlled by an independent signal if the occupant occupancy sensor also controls the lighting.

Functional Test Failure

The ATT failed to perform any of the following steps:

Step 1. Put the zone in occupied mode (i.e., adjust the occupancy schedule)
Step 2. Physically occupy the space and confirm that the occupant sensor detect the presence of an occupant in the zone.
Step 3. Adjust the thermostatic control so that the space temperature is within the deadband.
Step 4. Confirm that the zone is supplied with minimum ventilation.
Step 5. Adjust setpoint outside of occupied heating/cooling deadband but inside the occupied standby deadband. Confirm the zone is in heating or cooling mode.
Step 6. Physically vacate all spaces served by the zone.
Step 7. For space conditioning systems that also provide ventilation to the zone, confirm that within 5 minutes of occupant sensing controls indicating that the zone is unoccupied the setpoint is setup or setback and the zone is within the occupied standby deadband. Occupant sensing controls may have a time delay of up to 20 minutes before indicating the space is unoccupied and occupant sensing zone controls may allow up to an additional 5-minute time delay after occupant sensing controls have indicated all rooms served by the zone are unoccupied before resetting zone temperature setpoints and shutting off zone ventilation air).
Step 8. Confirm that no ventilation is being supplied to the space with the occupant sensor.
Step 9. Put the zone in pre-occupancy ventilation mode (i.e., adjust the occupancy schedule to one hour prior to normal scheduled occupancy).
Step 10. Physically vacate all spaces served by the zone.
Step 11. Confirm that within 5 minutes of occupant sensing controls indicating that all spaces served by the zone are unoccupied, the zone is supplied with pre-occupancy ventilation rate of Section 120.1(d)2: either the minimum rate of

outdoor air required by Section 120.1(c) or three complete air changes is supplied to the zone during the one-hour period immediately before the zone is scheduled to be occupied. (See Step 7 concerning maximum occupant sensing control time delay).

Step 12. Occupy a space served by the zone during the one hour immediately prior to scheduled occupancy. Confirm that the zone is supplied with pre-occupancy ventilation rate of Section 120.1(d)2.

Step 13. Restore the system to normal operation.

NA7.18.1 Dwelling Unit Ventilation Acceptance (Document NRCA-MCH-20a-H)

Construction Inspection Failures

The ATT failed to ensure that all of the following actions have been completed:

Prior to functional testing, verify and document the following:

1. System is designed to provide the required outside air when the unit is operating.
2. Specify the ventilation system type, such as balanced, supply or exhaust.
3. Specify the method of control.
4. Confirm the kitchen range hood is ventilated to outside.

Instrumentation Specification Failure

The ATT failed to verify any of the following items:

Item 1. Verify pressure measurement instrumentation equipment per code reference NA2.2.2.1

Item 2. Verify pressure measurement apparatus accuracy per code reference NA2.2.2.2

Item 3. Verify airflow measurement instrumentation is calibrated per code reference NA2.2.2.3

Compliance Documentation Failure

The ATT failed to document the following:

1. Which acceptance test compliance documents are to be completed in Table A-3

NA2.2.4.1.4 Kitchen Range Exhaust Acceptance (Document NRCA-MCH-20b-H)

Functional Test Failure

The ATT failed to ensure that all of the following actions have been completed:

1. Record the kitchen range hood manufacturer name and equipment model number

2. Confirm the kitchen range hood is HVI, AHAM, or another CEC approved directory certified to perform in compliance.
3. The rated airflow value or rated capture efficiency value listed in the HVI, AHAM, or other approved directory.
4. Record the sound rating value listed in the HVI, AHAM, or another approved directory.
5. Confirm airflow rating value is greater than or equal to design value.
6. Confirm sound rating value is less than or equal to design value.

NA2.2.4.1.1 IAQ Ventilation Acceptance (Document NRCA-MCH-20c-H)

Functional Test Failure

The ATT failed to ensure that all of the following actions have been completed:

1. Verify all fans are operational.
2. Measure and record the ventilation airflow(s).
3. Record fan data in Table B-2.
4. Record the design ventilation air flow rate for the dwelling unit.
5. Calculate the percent difference between the exhaust and supply airflow rates (balanced systems only).
6. Indicate if system passes and type of dwelling unit applicable.
7. Return system to normal operating conditions.

NA2.2.4.1.5 Dwelling Ventilation Acceptance (Document NRCA-MCH-20d-H)

Functional Test Failure

The ATT failed to ensure that all of the following actions have been completed:

1. Record the manufacturer make and model from the installed system nameplate.
2. Verify the model is listed in the HVI or other CEC-approved directory.
3. Determine whether fan efficacy performance rating is required and if applicable record the required CFM as specified on the certificate of compliance, determine and record the rated Power Consumed.
4. Determine if compliance with sensible recovery efficiency (SRE) performance rating is required, and if applicable record the SRE rating, required ventilation airflow for the installed H/ERV, and calculate the Net Airflow for the installed H/ERV.
5. Determine and record if the unit is in compliance with fan efficacy and sensible recovery efficiency ratings as required.

NA7.18.2 MF Envelope Leakage Acceptance (Document NRCA-MCH-21-H)

Construction Inspection Failures

The ATT failed to ensure that all of the following actions have been completed:

Prior to functional testing, verify and document the following:

1. Confirm the pressure boundary wall, ceiling, and floor penetrations are sealed.
2. Confirm all gaps around windows and doors are sealed.
3. Confirm all chases are sealed at floor level using a hard cover and the hard cover is sealed.

Functional Test Failure

The ATT failed to perform any of the following steps:

Step 1. Perform the dwelling unit envelope air leakage procedure as specified by Reference Nonresidential Appendix NA2.3 to verify the dwelling unit ventilation airflow conforms to the requirements of Section 160.2(b)2.

Step 2. Enter measured values, calculations, and indicate if test passes.

Instrumentation Specification Failure

The ATT failed to verify any of the following items:

Item 1. Verify measurement instrumentation conforms to the specifications in RESNET 380 Section 3.14.1.

Item 2. Record Model and Serial Number of manometer, airflow meter, thermometer, and blower door.

NA7.18.3 System Duct Leakage Acceptance (Document NRCA-MCH-22-A)

Construction Inspection Failures

The ATT failed to ensure that all of the following actions have been completed:

Prior to functional testing, verify and document the following:

1. Confirm windows and other openings are open to connect the building to the outside.
2. Confirm HVAC dampers are in their normal operating positions (NOP).

Functional Test Failure

The ATT failed to perform any of the following steps:

Step 1. Measure and record environmental data at the beginning and conclusion of each test including ambient temperature, indoor temperature and barometric pressure.

Step 2. Install static pressure probe in main plenum pointing into airstream induced by the test. If the test fan is on the roof, the static pressure probe will need to be connected to the measurement device at the test site with a tube long enough to make the connection.
Step 3. If the test fan is mounted inside, with the building open to the outside, use the building as reference pressure. If the test fan is located on the roof, use the outside as the reference pressure.
Step 4. Attach the test fan to the duct system
a) For roof top and wall mounted exhaust systems, remove the fan from the curb or opening and seal the test fan to the curb following test equipment manufacturer's instructions, making sure the dampers are open (NOP).
b) Alternatively, the test fan may be applied to a grille opening on the inside of the building following test equipment manufacturer's instructions.
Step 5. Temporarily seal the system including:
a) All of the grilles on the system using masking tape and air impermeable sheeting or duck mask made for this application.
b) Air handler access door or panel (do not use permanent sealing material, metal tape is acceptable).
c) For systems with an air handler with supply and return plenums, the entire duct system including the air- handler shall be included in the test.
Step 6. Adjust the test fan speed to maintain 25 Pa or 50 Pa at the static pressure probe location.
Step 7. Record the air flow (CFM) and temperature.
Step 8. Determine the nominal fan airflow using the product specifications of the installed equipment for the design static pressure.
Step 9. Divide the duct leakage flow by the nominal fan flow and convert to a percentage. If the duct leakage flow percentage is equal to or less than the target compliance criterion of 6% leakage the system passes.

NA7.18.4 HRV-ERV Verification Acceptance (Document NRCA-MCH-23-A)

Construction Inspection Failures

The ATT failed to ensure that all of the following actions have been completed:

Prior to functional testing, verify and document the following:

1. Confirm the total design ventilation airflow rate for the dwelling units served by the central ventilation system as required by Section 160.2(b)2Av.
2. Visually confirm that an ERV/HRV is installed and record the make and model.

Functional Test Failure

The ATT failed to perform any of the following steps:

Step 1. Verify that the ERV/HRV can provide the airflow rate that meets the design ventilation airflow rate by checking its product specifications.

Step 2. Verify that the ERV/HRV's nominal sensible recovery efficiency is 67 percent or greater, by checking its product specifications or databases such as HVI, AHRI, etc.
Step 3. Verify that the ERV/HRV can meet the fan power requirements of Section 170.2(c), by checking its product specifications or databases such as HVI, AHRI, etc.
Step 4. Verify that the ERV/HRV has a recovery bypass or free cooling function by visual inspection and checking its product specifications. Verify that its recovery bypass or free cooling control capabilities meet the requirements in Section 170.2, Table 170.2-G.
Step 5. Conduct functional testing of the bypass function according to NA7.5.4.

6.13 Desk Audit Pass/Fail Criteria

The purpose of the desk audit is to verify that the individual acceptance test form has been completed correctly.

The ATT fails a desk audit if:

1. **Project Information** on top of each page of the NRCA-MCH documents is incomplete or missing;
2. **Construction Inspection** information is missing or incomplete, i.e., the appropriate boxes have not been checked or pertinent information has not been provided;
3. **Functional Inspection** information is missing or incomplete, i.e., the appropriate boxes have not been checked or pertinent information has not been provided;
4. If applicable, **Testing Calculations and Results** information is missing or incomplete, i.e., the appropriate boxes have not been checked or pertinent information has not been provided;
5. **Evaluation** information is missing or incomplete;
6. The **Documentation Author's Declaration Statement** has not been completed or information is missing;
7. The **Field Technician's Declaration Statement** has not been completed or information is missing; or
8. The **Responsible Person's Declaration Statement** has not been completed or information is missing.

6.14 Accreditation Program for Personnel Certification Bodies under ANSI/ISO/IEC 17024

The American National Standards Institute (ANSI) currently administers two accreditation programs for personnel certification agencies. The first accreditation program is based on the International Standard ANSI/ISO/IEC 17024 and the second is based on The Conference for Food Protection Accreditation Standards for certification agencies that certify food protection managers.

The process used by ANSI to accredit certification bodies is based on an international standard (ISO/IEC 17011). Adherence to a rigorous internationally recognized accreditation process ensures that the ANSI process conforms to the highest accreditation standard and represents the best practices in accreditation. ANSI is the only personnel certification accreditation body in the United States to meet nationally accepted practices for accreditation bodies.

The ANSI accreditation process involves both a review of a paper application and the performance of an assessment (onsite visit) to validate information provided by each applicant. The use of an onsite assessment for accreditation of personnel certification agencies is unique to ANSI.

Close to one million professionals currently hold certifications from organizations accredited under ANSI's personnel certification programs.

ANSI accreditation is recognized both nationally and internationally and has become the hallmark of a quality certification program. Unique features of ANSI accreditation are:

- ANSI accreditation involves not only review of the submitted material but also a site visit to ensure that compliance with the requirements and verify documents that have been submitted prior to the on-site visit. Due to the high degree of integrity and confidence that is associated with the ANSI accreditation process, ANSI accreditation is generally recognized as the gold standard in personnel certification accreditation.
- The standard used by ANSI to accredit certification bodies is an American National Standard as well as an ISO/IEC Standard. Accreditation to an international standard is extremely important for certification bodies that have global operations or aspirations. The American National Standard is important to facilitate government recognition.
- ANSI follows an internationally recognized process for accrediting organizations. ANSI conducts its accreditation in accordance with the requirement of ISO/IEC 17011-Conformity Assessment - General Requirements for Accreditation Bodies accrediting Conformity Assessment Bodies. This International Standard is the foundational Standard that is used to recognize ANSI accreditation in any multilateral and/or mutual recognition agreements.
- ANSI has a long track record of successfully conducting accreditation of certification programs in different industrial sectors, ranging from not-for-profits, large multinational corporations, and government agencies.

U.S. Government Recognition

The U.S. Government is increasingly relying on ANSI accreditation for verification of quality of certification programs and to control fraud and misuse in certain industries. In view of the proliferation of certification programs and the need to help the consumers make informed decisions, government agencies are looking to ANSI accreditation to differentiate quality programs and improve practices in industry. The ANSI accreditation process is designed to increase the integrity, confidence, and mobility of certified

professionals. Some of the government agencies that are closely associated with ANSI accreditation include:

- Food and Drug Administration
- Department of Defense
- State Regulation
- Massachusetts Securities Commission
- Occupational Safety and Health Administration

TABB Reports to ANSI

Attachment 6.3 lists three reports which are required by ANSI to review and assess the performance of the TABB certification for testing, adjusting and balancing technicians and supervisors. TABB-certification in testing, adjusting, and balancing is a prerequisite for technicians to become certified as a MATT Level 2.

6.15 NEMIC ATTCP Project Database

Through a third party, NEMIC has developed a project database for entering, storing, and distributing acceptance test forms completed by NEMIC-certified ATTs. Functions of the database were demonstrated to CEC staff on 31 January, 2020. The database also serves as a reference for the NEMIC ATTCP QAP, as described in this Section.

7 Certification Identification Number and Verification of ATT Status

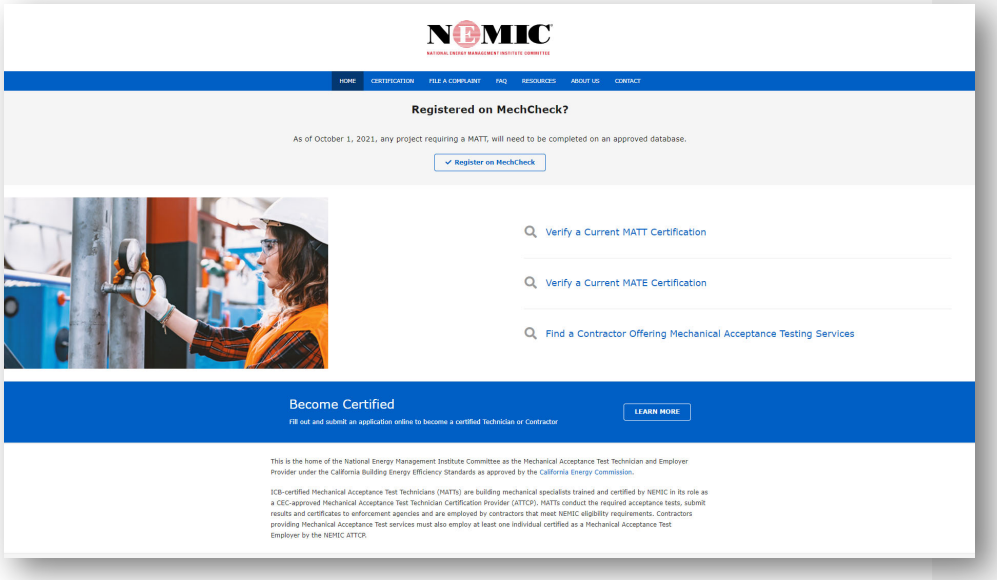
In accordance with CCR Title 24 Part 1 Section 10-103.2(c)3G, this Section documents NEMIC's process to issue a unique certification identification number to each ATT; maintain an accurate record of the certification status for all ATTs and ATEs that NEMIC has certified; provide verification of current ATT certification status upon request to authorized document Registration Provider personnel or Enforcement Agency personnel to determine the ATT's eligibility to sign Certificate of Acceptance documentation according to all applicable requirements in Sections 10-103.2, 10-102, 10-103(a)4, and Reference Joint Appendix JA7.

The NEMIC ATTCP maintains a website at http://www.attcp.org, which is: (a) a repository for all information concerning the NEMIC ATTCP, its certification procedures, (b) provides a listing of each certified ATT and ATE, (c) provides a mechanism for filing complaints regarding the performance of ATTs and (d) provides other pertinent information. Each ATT candidate who has passed the certification exam is assigned a unique certification number. The certification number clearly identifies the type of certification held. The website will be linked to a database of certified ATTs and ATEs and the ATTs will be linked to their respective ATE by the certification number. The database is accessible to the Enforcement Agency personnel and the public.

The website listing will display the certification status of each ATT and ATE, expressed as:

- *Certification is current*. This status is expressed when the ATT or ATE have successfully passed their respective certification exam or have successfully renewed their respective certification as stated in the NEMIC Certification Manual.
- *Certification is revoked*. This status is expressed when the certification of the ATT or ATE has been revoked according to Sections 2.4 and 2.7 of the NEMIC Certification Manual.

A sample of the www.attcp.org home page is shown on the following page. The database of registered ATTs and ATEs will share that information with the Registry. Other enhancements to the website will be made as information needs are recognized. The website is currently operational and available to the public.



The homepage of the NEMIC ATTCP website.

8 Annual Reports

In accordance with CCR Title 24 Part 1 Section 10-103.(d), this Section documents how NEMIC will:

a. Provide an annual report to the CEC summarizing the NEMIC certification services provided over the reporting period, including the total number of ATTs and ATEs certified (a) during the reporting period and (b) to date.
b. Report to the CEC any adjustments made to the training curricula to address: changes to the Building Energy Efficiency Standards Acceptance Testing requirements, changes to the Building Energy Efficiency Standards, or to ensure training is reflective of the variety of lighting controls that are currently encountered in the field; no less than six months prior to the effective date of any newly adopted, or amendment to, existing Building Energy Efficiency Standards.

The Administrator of the NEMIC ATTCP will fulfill this reporting function by providing the following:

- A list of certified ATTs and ATEs. The list will indicate the certification status as listed in Section 7.
- A list of all adjustments, if any, to the certification process
- A list of all adjustments to the training curricula to reflect pertinent changes to the Building Energy Efficiency Standards.
- The report will be on a calendar year basis and delivered by March 31 of the following year.