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California Energy Commission

STAFF EVALUATION REPORT

NEMIC ATTCP APPLICATION REVIEW

Energy Commission Staff Review of the National Energy Management Institute Committee Application to become a Nonresidential Mechanical Acceptance Test Technician Certification Provider under Title 24, Part 1, Chapter 10, Section 10-103-B of the 2013 California Building Code.

CALIFORNIA
ENERGY COMMISSION

Edmund G. Brown Jr., Governor

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ABSTRACT

Staff has completed their evaluation of the NEMIC application pursuant to Title 24, Part 1, Chapter 10, Section 10-103-B(f), which was submitted on August 7, 2014. Staff has determined that the application submitted by NEMIC is in compliance with the requirements of Title 24, Part 1, Chapter 10, Section 10-103-B(c), with one condition of approval. A detailed summary of staff's conclusions for each requirement of Section 10-103-B(c) is provided in Attachment 1.

As a condition of approval, staff recommends to the Energy Commission that NEMIC must implement the program described in its application stating that NEMIC will launch and maintain a website that will be available to enforcement agency personnel and the public within 90 days of Energy Commission approval. This website must be implemented as described in NEMIC's application in order for NEMIC to meet the following requirements (a) maintain an accurate listing of each certified Acceptance Test Technicians (ATT) and Acceptance Test Employers (ATE); (b) provide a mechanism for filing and addressing complaints regarding the performance of ATTs; and (c) provide certification status of ATT, upon request, to enforcement agency personnel so they may verify the eligibility of ATT to sign Certificate of Acceptance documentation.

Keywords: Nonresidential Mechanical ATTCP, NEMIC

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EXECUTIVE SUMMARY

The National Energy Management Institute Committee (NEMIC) submitted its application to the California Energy Commission to be approved as a Nonresidential Mechanical Acceptance Test Technician Certification Provider (ATTCP) on August 7, 2014. NEMIC is the program administrator for the Testing, Adjusting and Balancing Bureau (TABB). TABB was approved as an Interim ATTCP on June 24, 2014, pursuant to Title 24, Part 1, Chapter 10, Section 10-103-B(e) of the 2013 California Building Code.

Staff has completed their evaluation of the NEMIC application pursuant to Title 24, Part 1, Chapter 10, Section 10-103-B(f), which requires staff to review ATTCP applications according to the criteria and procedures in Title 24, Part 1, Chapter 10, Section 10-103-B(c) to determine if such providers are approved to provide acceptance testing certification services. In this report, staff has considered each requirement under Title 24, Part 1, Chapter 10, Section 10-103-B(c) and summarized the relevant sections from the NEMIC application intended to demonstrate compliance. Staff has made plain the reason or rationale used to determine if the NEMIC application is in compliance with the Title 24, Part 1, Chapter 10, Section 10-103-B(c) requirements.

Staff has determined that the application submitted by NEMIC is in compliance in regard to the requirements of Title 24, Part 1, Chapter 10, Section 10-103-B(c). A detailed summary of staff's conclusions for each requirement of Section 10-103-B(c) is provided in Attachment 1.

Additionally, as a condition of approval, NEMIC will implement the program described in its application. As part of this condition, NEMIC will launch and maintain a website that will be available to enforcement agency personnel and the public within 90 days of Energy Commission approval. This website is a critical component of the compliance strategy for Title 24, Part 1, Chapter 10, Section 10-103-B(c)(3)(G) as well as serving as the main portal for public complaints and local building department outreach. While staff agrees with the applicant that the proposed database with web access will satisfy the requirements of Section 10-103-B(c)(3)(G), the fact that this website is not already launched means that this requirement has not been satisfied. Staff recommends that this be a condition of approval for the approval of the NEMIC application. This website must be implemented as described in NEMIC's application for NEMIC to meet the following requirements: (a) maintain an accurate listing of each certified Acceptance Test Technician (ATT) and Acceptance Test Employers (ATE); (b) provide a mechanism and procedure for filing complaints regarding the performance of ATTs; and (c) provide certification status of ATT, upon request, to enforcement agency personnel so that they may verify the eligibility of ATT to sign Certificate of Acceptance documentation.

Staff Review of NEMIC ATTCP Application

The National Energy Management Institute Committee (NEMIC) submitted their application to the California Energy Commission to be approved as a Nonresidential Mechanical Acceptance Test Technician Certification Provider (ATTCP) on August 7, 2014. NEMIC is the program administrator for the Testing, Adjusting and Balancing Bureau (TABB) who were approved as an Interim ATTCP on June 24, 2014, pursuant to Title 24, Part 1, Chapter 10, Section 10-103-B(e) of the 2013 California Building Code.

Under California Code of Regulations, Title 24, Part 1, Chapter 10, Section 10-103-B(f), "[t]he Energy Commission shall review ATTCP applications according to the criteria and procedures in Section 10-103-B(c) to determine if such providers are approved to provide acceptance testing certification services."

On November 26, 2013, the Commission approved NEMIC's application seeking confidentiality for curriculum and testing materials as part of it's efforts to become a Mechanical ATTCP (Approval of Confidentiality Application Letter).[1] The confidential material consists of curriculum and training modules addressing various technical areas an Acceptance Technician would need to demonstrate competence in before being certified. Commission staff has performed an analysis of how the confidential portions of NEMIC's application meet the requirements of Section 10-103-B(c) in this document.

Title 24, Part 1, Chapter 10, Section 10-103-B(c):

Qualifications and Approval of Certification Providers. Entities that submit an application to be approved as an ATTCP shall include a written application to the Commission with a summary and the necessary background documents to explain how the following criteria and procedures have been met:

Section 10-103-B(c)(1)

Requirements for Applicant ATTCPs to Document Organizational Structure. ATTCPs shall provide written explanations of the organization type, by-laws, and ownership structure. ATTCPs shall explain in writing how its certification program meets the qualifications of Building Energy Efficiency Standards, Section 10-103-B(c); and how its organizational structure and procedures include independent oversight, quality assurance, supervision and support of the acceptance test training and certification processes.

[1] The letter was docketed 13-ATTCP-01, TN 72379, NOV 26 2013.

Summary of Application Compliance
Table 10-103-B(c)(1)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Organization Type	Volume 1, Section 1.2 This is a 501(C)(6) – Joint Labor Management Trust	☒	☐
Ownership Structure	Volume 1, Section 1.1 Volume 1, Section 1.3	☒	☐
By-Laws	Volume 1, Attachments 1.2, 1.2 And 1.3, Which Are In Order: NEMIC Trust Agreement ITI Trust Agreement NEMI Articles of Incorporation Under separate cover SMART Articles of Incorporation SMACNA Articles of Incorporation	☒	☐
Quality Assurance of The Certification Process	Volume 1, Section 1.3	☒	☐
Independent Oversight	Volume 1, Section 1.1 The Applicant Is Submitting Its Compliance With ISO/IEC 17024 Standards Compliance.	☒	☐
Supervision	Volume 1, Section 1.3	☒	☐
Support of Acceptance Test Training and Certification Processes	Volume 1, Section 1.1	☒	☐

Discussion

NEMIC is a Joint Labor Management Trust that is tax exempt under the Internal Revenue Code Section 501(c)(6), which is established in its Trust Agreement: Volume 1, Attachment 1.1 and Volume 3, Attachment 1.1. Staff has confirmed that the applicant is a Section 501(c)(6) status through their employer identification number (EIN) registered with the United States Internal Revenue Service.

NEMIC is overseen by a Board of Trustees that are appointed by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) and the Sheet Metal Air Rail Transportation (SMART) association. While NEMIC will manage the certification program, the training will be performed under the management of SMART with the National Energy Management Institute (NEMI) and the International training Institute (ITI) for the Sheet Metal and Air Conditioning Industry.

The NEMIC Trust Agreement clearly discusses the intent of the joint labor management trust, in part, to be the establishment, implementation, and administration of testing, accreditation, and certification program for the sheet metal industry that is consistent with the goals of the ATTCP requirements. The ITI Trust Agreement clearly states that the intent of the organization is, in part, to provide education and training for the Sheet Metal Industry that is consistent with the

goals of the ATTCP requirements. The NEMI Articles of Incorporation clearly show that the intent of the organization is, in part, to provide instructional materials in regard to energy management and indoor air quality by the development of appropriate training centers and laboratory facilities. The intention indicated by the NEMI Articles of Incorporation is consistent with the goals of the ATTCP requirements. Staff is therefore convinced that none of the organizations in direct control of the proposed Acceptance Test Technician[2] (ATT)/Acceptance Test Employer[3] (ATE) application and certification process is in conflict with the regulatory intent. SMACNA and SMART, while not in direct control of the day-to-day process, are in general control of NEMIC via the Board of Trustees. Staff has similarly reviewed the Certificate of Incorporation for SMACNA and the Constitutional and Ritual of SMART and finds there to be no conflict of interest with the regulatory intent of the ATTCP requirements.

The NEMIC application generally relies on compliance with the International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 17024 standard to comply with the quality assurance, independent oversight, supervision and support of the ATT certification process requirements. NEMIC explains the efficacy of the certification process and how its organizational structure and procedures include independent oversight, quality assurance, supervision, and support of the acceptance test training and certification processes. After careful review of the ISO/IEC 17024 standard's reporting requirements, staff concurs with the applicant.

Section 10-103-B(c)(2)

Requirement for Certification of Employers. The ATTCPs shall provide written explanation of how its program includes certification and oversight of Acceptance Test Employers to ensure quality control and appropriate supervision and support for Acceptance Test Technicians.

Summary of Application Compliance
Table 10-103-B(c)(2)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Certification of ATE	Volume 2, Section 2.0	☒	☐
Oversight of ATE	Volume 2, Section 2.0	☒	☐

[2] Acceptance Test Technician is a Field Technician as defined in Title 24, Part 1, Chapter 10, Section 10-102 of the California Building Code who is certified by an authorized Acceptance Test Technician Certification Provider pursuant to the requirements of Sections 10-103-A or 10-103-B.

[3] Acceptance Test Employer is a person or entity who employs an Acceptance Test Technician and is certified by an authorized Acceptance Test Technician Certification Provider pursuant to the requirements of Sections 10-103-A or 10-103-B.

Discussion

The NEMIC application describes the following eligibility requirements required to become an Acceptance Test Employer (ATE). The ATE applicant must be a signatory to a collective bargaining agreement that provides for contributions on behalf of its members directly to NEMIC and be current with all financial obligations under that agreement. The ATE applicant must also hold a Certificate of Completion from NEMI regarding training on mechanical acceptance testing mandates and procedures as specified by the latest version of the Energy Code. Once NEMIC has determined that the applicant has complied with these requirements, NEMIC will administer a timed and sealed ATE Certification Test via proctor that NEMIC will score.

ATEs will be trained by NEMI on the California Code of Regulations Title 24, Part 1, Section 10-102 and 10-103-B, and Part 6 Section 120.5 (which are the controlling regulations for the acceptance testing requirements); the 2013 Energy Code and 2013 Nonresidential Appendix NA 7 with specific attention for NA 7.5 (which is the Mechanical Systems Acceptance Tests procedures). Also, NEMI will train ATEs on Section 10-103 "Permit, Certificate, Informational and Enforcement requirements for Designers, Installers, Builders, Manufacturers, and Suppliers." Section 10-103 describes how compliance with the Certification of Installation, Certificate of Acceptance, and Certificate of Field Verification is enforced and is foundational for ATEs to understand their responsibilities as well as those of the ATTs that they employ.

NEMIC Certified ATEs must comply with all of the following:

- The NEMIC Code of Conduct;
- ATTCP protocols and regulations;
- California Code of Regulations, Title 24;
- Applicable registration, insurance, licensing and bonding mandates and maintain proof of same;
- Warrant that at least one executive has completed the NEMI ATE Certification Course,
- Submit copies of acceptance tests performed by its ATTs to the NEMIC ATTCP within 10 business days of completion (beginning in 2015);
- Submit records of financial data that substantiate ATTCP-related work to NEMIC upon request;
- Notify NEMIC within 48 hours if its contractor's license or business license has been revoked or suspended; and
- Notify NEMIC within 48 hours if the employer or any official or executive of the employer has been found guilty of a felony in the court of law or has been found liable in a civil litigation.

NEMIC includes a decertification process for ATEs that includes reasons to decertify ATEs such as: falsification of data and reports, failure to maintain eligibility, failure to meet the Code of Conduct, failure to meet Certification obligations and other causes. NEMIC also requires that ATE Certifications be renewed with the latest version of the Energy Code. Staff agrees that

these requirements and procedures give NEMIC the appropriate tools necessary to provide oversight of Acceptance Test Employers.

Given that NEMIC is dedicated to its unionized members, staff finds that the above requirements for eligibility for its certification of potential ATEs meets the requirements of section 10-103-B(c)(2). Additionally, the testing procedures are accommodating and reasonably secure. The proposed training is consistent with the regulatory requirements. Therefore, staff concurs with the applicant that these procedures satisfy the requirements.

Section 10-103-B(c)(3)

Requirements for Applicant ATTCPs to Document Training and Certification Procedures. ATTCPs shall provide a complete copy of all training and testing procedures, manuals, handbooks and materials. ATTCPs shall explain, in writing, how training and certification procedures include, but are not limited to, the following:

Section 10-103-B(c)(3)(A)
Both hands-on experience and theoretical training such that ATTs demonstrate their ability to apply the Building Energy Efficiency Standards acceptance testing and documentation requirements to a comprehensive variety of mechanical systems and controls that is reflective of the range of systems currently encountered in the field.

Summary of Application Compliance
Table 10-103-B(c)(3)(A)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Theoretical Training	Volume 3, Section 3.2.1	☒	☐
Hands-On Experience	Volume 3, Section 3.2.2	☒	☐

Discussion
The theoretical training proposed by NEMIC for ATTs includes classroom training with hands-on demonstrations in all mechanical acceptance tests specified by the 2013 Energy Standards, Section 120.5. Based on the staff review of the confidential materials supplied by the applicant, staff is confident that the training materials and laboratories completely satisfy the requirements of Section 10-103-B(c)(3)(A).

The training has 21 modules that include an overview of the California Building Standards (Title 24), mechanical acceptance testing requirements, mechanical acceptance test technician training and certification process (as proposed by NEMIC) and 17 modules covering all of Appendix NA7.5 (subsections 1 through 16) "Installation and Acceptance Requirements for Nonresidential Buildings and Covered Processes."

Staff has reviewed the training materials (modules 1 through 21) and has the following comments.

- Modules 1 and 2 represent a sufficient overview of the California Building Standards and the Mechanical Acceptance Testing Requirements.

- Module 3 is a sufficient discussion of the NEMIC Mechanical Acceptance Testing Technician Training and Certification Process with one advisement from staff. The applicant has agreed to include a discussion of the extension of the interim period approved pursuant to Order Number 14-1117-10,[4] which allows interim-approved ATTCPs to train and certify, pursuant to Section 10-103-B(e)(3)-(4), through June 30, 2015, ATT and ATE on the mechanical acceptances tests listed in Section 10-103-B(e)(1).

- Module 4 (NA7.5.1.1 Variable Air Volume Systems Outdoor Air Acceptance) generally follows the recommendations within the 2013 Nonresidential Compliance Manual (NRCM) Section 13.54 and 13.55. The following three slides germinated a clarification request from staff to the applicant and were subsequently resolved by the applicant's response of February 20, 2015.

    - Slide 17: the applicant has agreed to indicate that the ATT should check that a fixed minimum damper setpoint is not being used to control outside air[5].

    - Slide 25 includes a note stating, "This measurement method is not supported by any standards setting organization (ASHRAE, AMCA, etc.). In all likelihood you will obtain a wrong reading." This is the method recommend by NRCM Section 13.54 and 13.55. The applicant has proposed an alternative methodology that will, in staff opinion, render a better result that can be executed more consistently in the field[6].

    - Slide 30: the applicant agrees with staff to recommend that disabling a demand control ventilation system if applicable should be the first step for the functional testing[7].

- Module 5 (NA7.5.1.2 Constant Volume Systems Outdoor Air Acceptance) generally follows the recommendations within the NRCM Section 13.56 and 13.57. There are no

[4] See Proposed Order that was approved by the Commission, available at: http://www.energy.ca.gov/business_meetings/2014_packets/2014-11-17/Item_10_6-Month_Ext_of_Mech_ATTCP_Interim/Extension_of_the_Interim_Approval_Period_Proposed_Order.pdf.

[5] Response to CEC Review of NEMIC's Application 2-20-15, Devor Novosel, Chief Technology Officer, NEMIC.

[6] Ibid.

[7] Ibid.

significant deviations from the NRCM, therefore staff accepts Module 5 as acceptable instruction for NA7.5.1.2 Constant Volume Systems Outdoor Air Acceptance.

- Module 6 (NA7.5.2 Constant-Volume, Single-Zone, Unitary Air Conditioners and Heat Pumps) generally follows the recommendations within the NRCM Section 13.58 and 13.59. There are no significant deviations from the NRCM, therefore staff accepts Module 6 as acceptable instruction for NA7.5.2 Constant-Volume, Single-Zone, Unitary Air Conditioners and Heat Pumps.

- Module 7 (NA7.5.3 Air Distribution System Acceptance) generally follows the recommendations within the NRCM Section 13.60 and 13.61. There are no significant deviations from the NRCM, therefore staff accepts Module 7 as acceptable instruction for NA7.5.3 Air Distribution System Acceptance.

- Module 8 (NA7.5.4 Air Economizer Controls) generally follows the recommendations within the NRCM Section 13.62 through 13.64. There are no significant deviations from the NRCM, therefore Module 8 is an acceptable instruction for NA7.5.4 Air Economizer Controls. Staff does recommend that the applicant include a link to the Manufacturer Certified Equipment, Products and Devices Classifications, Air Economizers web page on Slide 4 to help ATT/ATEs identify appropriate certified equipment. (http://www.energy.ca.gov/title24/equipment_cert/ae/index.html).

- Module 9 (NA7.5.5 Demand Control Ventilation Systems) generally follows the recommendations within the NRCM Section 13.65 through 13.66. There are no significant deviations from the NRCM, therefore Module 9 is an acceptable instruction for NA7.5.5 Demand Control Ventilation Systems.

- Module 10 (NA7.5.6 Supply Fan Variable Flow Control) generally follows the recommendations within the NRCM Section 13.67 through 13.68. There are no significant deviations from the NRCM, therefore Module 10 is an acceptable instruction for NA7.5.6 Supply Fan Variable Flow Control.

- Module 11 (NA7.5.7 Valve Leakage Acceptance) generally follows the recommendations within the NRCM Section 13.69 through 13.70. There are no significant deviations from the NRCM, therefore Module 11 is an acceptable instruction for NA7.5.7 Valve Leakage Acceptance.

- Module 12 (NA7.5.8 Supply Water Temperature Reset Controls Acceptance) generally follows the recommendations within the NRCM Section 13.71 through 13.72. There are no significant deviations from the NRCM, therefore staff accepts Module 12 as acceptable instruction for NA7.5.8 Supply Water Temperature Reset Controls Acceptance.

- Module 13 (NA7.5.9 Hydronic System Variable Flow Control Acceptance) generally follows the recommendations within the NRCM Section 13.73 through 13.74. There are no significant deviations from the NRCM, therefore Module 13 is an acceptable instruction for NA7.5.9 Hydronic System Variable Flow Control Acceptance. However, staff does recommend that the applicant include a reference to Section 140.4(k)(6) "Hydronic System Measures, Variable Flow Control" which gives the explicit regulations and exceptions to those regulations for variable flow controls on Hydronic systems as further recommended study for the ATTs.

- Module 14 (NA7.5.10 Automatic Demand Shed Control Acceptance) generally follows the recommendations within the NRCM Section 13.75 through 13.76. There are no significant deviations from the NRCM, therefore staff accepts Module 14 as acceptable instruction for NA7.5.10 Automatic Demand Shed Control Acceptance. However, the NRCM does recommend (as optional equipment) the use of a front-end computer for the DDC system.

- Module 15 (NA7.5.11 Fault Detection and Diagnostics for Packaged Direct-Expansion Units Acceptance) generally follows the recommendations within the NRCM Section 13.77. There are no significant deviations from the NRCM, therefore staff accepts Module 15 as acceptable instruction for NA7.5.11 Fault Detection and Diagnostics for Packaged Direct-Expansion Units Acceptance.

- Module 16 (NA7.5.12 Automatic Fault Detection Diagnostics for Air Handling Units and Zone Terminal Units Acceptance) generally follows the recommendations within the NRCM Section 13.78. There are no significant deviations from the NRCM, therefore staff accepts Module 16 as acceptable instruction for NA7.5.12 Automatic Fault Detection Diagnostics for Air Handling Units and Zone Terminal Units Acceptance.

- Module 17 (NA7.5.13 Distributed Energy Storage DX AC Acceptance) generally follows the recommendations within the NRCM Section 13.79. There are no significant deviations from the NRCM, therefore staff accepts Module 17 as acceptable instruction for NA7.5.13 Distributed Energy Storage DX AC Acceptance.

- Module 18 (NA7.5.14 Thermal Energy Storage System Acceptance) generally follows the recommendations within the NRCM Section 13.80. There are no significant deviations from the NRCM, therefore staff accepts Module 18 as acceptable instruction for NA7.5.14 Thermal Energy Storage System Acceptance.

- Module 19 (NA7.5.15 Supply Air Temperature Reset Controls Acceptance) generally follows the recommendations within the NRCM Section 13.81 through 13.82. There are no significant deviations from the NRCM, therefore staff accepts Module 19 as acceptable instruction for NA7.5.15 Supply Air Temperature Reset Controls Acceptance.

- Module 20 (NA7.5.16 Condenser Water Supply Temperature Reset Controls Acceptance) generally follows the recommendations within the NRCM Section 13.83. There are no significant deviations from the NRCM, therefore staff accepts Module 20 as acceptable instruction for NA7.5.16 Condenser Water Supply Temperature Reset Controls Acceptance.

- Module 21 (NA7.5.16 Energy Management Control System Acceptance) generally follows the recommendations within the NRCM Section 13.83. There are no significant deviations from the NRCM, therefore staff accepts Module 21 as acceptable instruction for NA7.5.16 Energy Management Control System Acceptance.

The hands-on experience proposed by NEMIC for ATTs includes Joint Apprenticeship Training Centers (JATCs) across the State of California and includes the Sheet Metal Workers Locals 104 and 105, and the California Association of Sheet Metal and Air Conditioning Contractors' National Association (CAL SMACNA). Each JATC includes classrooms and laboratories where apprentices and journeymen (ATTs) receive hands-on training.

The NEMIC laboratory facilities have sufficient equipment for a number of different tests to be simulated at a single facility. The NEMIC application (Volume 3, Attachment 3.3) describes the possible configuration for several acceptance tests, but not all. Staff requested that the applicant submit a description of the equipment used and the setup used to produce hands-on laboratory simulations of each acceptance test list in Section 120.5. The applicant's reply to the staff request included sufficient information and descriptions of laboratory equipment and procedures to satisfy the requirement. Staff has also been invited to attend a laboratory demonstration at the applicant's City of Industry Joint Apprentice Training Center on March 6,2015, which staff will attend.

Section 10-103-B(c)(3)(B)

Mechanical Acceptance Test Technician Training.

Section 10-103-B(c)(3)(B)(i)

Curricula: ATTCP training curricula for Mechanical ATTs shall include, but not be limited to, the analysis, theory, and practical application of the following:

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; and
t) Building Energy Efficiency Standards acceptance testing compliance documentation for mechanical systems.

Summary of Application Compliance
Table 10-103-B(c)(3)(B)(i)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Constant Volume System Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Variable Volume System Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Air-Side Economizers	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Air Distribution System Leakage	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Demand Controlled Ventilation With CO2CO2 Sensors	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Automatic Demand Shed Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Hydronic Valve Leakage	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Hydronic System Variable Flow Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Supply Air Temperature Reset Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Condenser Water Temperature Reset Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Outdoor Air Ventilation Systems	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Supply Fan Variable Flow Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Boiler And Chiller Isolation Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Fault Detection And Diagnostics For Packaged Direct-Expansion Units	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Automatic Fault Detection And Diagnostics For Air Handling Units And Zone Terminal Units	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Distributed Energy Storage Direct-Expansion Air Conditioning Systems	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Thermal Energy Storage Systems	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table On Page 12: Curricula Topics	☒	☐
Energy Code Mechanical Acceptance Testing Procedures	Volume 3, Attachment 9.1 Through 9.9	☒	☐
Energy Code Acceptance Testing Compliance Documentation For Mechanical Systems	Volume 3, Attachment 9.1 Through 9.9	☒	☐

Discussion

The ITI Certification Manual (See Volume 3, Attachment 3.2 of the Application) includes the details of the curricula that are included for NEMIC ATTs. Based on the staff review of the confidential materials supplied by the applicant, staff is confident that the training materials and laboratories completely satisfy the requirements of Section 10-103-B(c)(3)(B)(i).

Energy Commission staff's analysis of whether the curricula subjects (items a through t listed above) overlap with the curricula requirements listed in Section 10-103-B(c)(B)(i) is shown by the table on the following page.

Staff compared the description of the ITI Standards of Proficiency (Volume 3, Attachment 3.2), with the curricula requirements in Section 10-103-B(3)(B)(i) and agrees with the applicant that the ITI certification will adequately cover the requirements 10-103-B(3)(B)(i)(a) through (r). This analysis is taken in conjunction with training provided in Volume 3, Attachments 9.1 through 9.9. Staff finds that the training curricula provided by the applicant is compliant with the requirements of Section 10-103-B(c)(3)(B)(i).

ITI Standards of Proficiency and Section 10-103-B(c)(3)(B)(i) Required Curricula Topics

ITI STANDARDS OF PROFICIENCY	CONSTANT VOLUME SYSTEM CONTROLS	VARIABLE VOLUME SYSTEM CONTROLS	AIR-SIDE ECONOMIZERS	AIR DISTRIBUTION SYSTEM LEAKAGE	DEMAND CONTROLLED VENTILATION W/CO2 SENSORS	DEMAND CONTROLLED VENTILATION W/OCCUPANCY SENSORS	AUTOMATIC DEMAND SHED CONTROLS	HYDRONIC VALVE LEAKAGE	HYDRONIC SYSTEM VARIABLE FLOW CONTROLS	SUPPLY AIR TEMPERATURE RESET	CONDENSER WATER TEMPERATURE RESET CONTROLS	OUTDOOR AIR VENTILATION SYSTEMS	SUPPLY FAN VARIABLE FLOW CONTROLS	BOILER AND CHILLER ISOLATION CONTROLS	FAULT DETECTION AND DIAGNOSTICS FOR PACKAGED DIRECT EXPANSION UNITS	AUTOMATIC FAULT DETECTION AND DIAGNOSTICS FOR AIR HANDLING UNITS AND ZONE TERMINAL UNITS	DISTRIBUTED ENERGY STORAGE DIRECT-EXPANSION AIR CONDITIONING SYSTEMS	THERMAL ENERGY STORAGE SYSTEMS
MATHEMATICS	X	X		X	X	X				X	X	X	X					
FLUID FLOW	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
HEAT TRANSFER	X	X					X	X	X	X	X	X		X	X	X	X	X
PSYCHOMETRICS	X	X	X		X	X	X			X	X	X		X	X	X	X	X
PROJECT DOCUMENTATION	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AIR DISTRIBUTION SYSTEMS	X	X	X	X	X	X	X					X			X	X	X	X
HYDRONIC DISTRIBUTION SYSTEMS							X	X	X		X			X		X	X	X
AUTOMATIC CONTROL SYSTEMS	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
ELECTRICAL SYSTEMS	X	X											X					
INSTRUMENTATION	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
DIRECT DIGITAL CONTROLS	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X
PRELIMINARY TAB PROCEDURES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AIR SYSTEM TAB PROCEDURES	X	X	X	X	X	X	X					X			X	X	X	X
SPECIFIC AIR SYSTEM PROCEDURES	X	X	X	X	X	X	X			X		X	X		X	X	X	X
HYDRONIC SYSTEM TAB PROCEDURES							X	X	X	X	X	X	X	X	X	X	X	X
REFERENCE DATA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Source: NEMIC Application, Volume 3, Page 12

Section 10-103-B(c)(3)(B)(ii)

Hands-on training. The ATTCP shall describe in its application the design and technical specifications of the laboratory boards, equipment, and other elements that will be used to meet the hands-on requirements of the training and certification.

Summary of Application Compliance

Table 10-103-B(c)(3)(B)(ii)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Hands-On Experience	Volume 3, Section 3.2.2	☒	☐

Discussion (repeated from above Section 10-103-B(c)(3)(A))

The hands-on experience proposed by NEMIC for ATTs includes Joint Apprenticeship Training Centers (JATCs) across California and includes the Sheet Metal Workers Locals 104 and 105, and the California Association of Sheet Metal and Air Conditioning Contractors' National Association (CAL SMACNA). Each JATC includes classrooms and laboratories where apprentices and journeymen receive hands-on training.

The NEMIC laboratory facilities have sufficient equipment such that a number of different tests can be simulated at a single facility. The NEMIC application (Volume 3, Attachment 3.3) describes the possible configuration for several acceptance tests. The applicant's reply to the staff request included sufficient information and descriptions of laboratory equipment and procedures to satisfy the requirement. Staff has also been invited to attend a laboratory demonstration at the applicant's City of Industry Joint Apprentice Training Center on March 6, 2015, which staff will attend.

Section 10-103-B(c)(3)(B)(iii)

Prequalification: Participation in the technician certification program shall be limited to persons who have at least three years of verifiable professional experience and expertise in mechanical controls and systems as determined by the Mechanical ATTCPs to demonstrate an ability to understand and apply the Mechanical Acceptance Test Technician certification training. The criteria and review processes used by the ATTCP to determine the relevance of technician professional experience shall be described in the ATTCP application to the Energy Commission.

Summary of Application Compliance
Table 10-103-B(c)(3)(B)(iii)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Three Years of Experience And Expertise in Mechanical Controls and Systems	Volume 3, Section 3.3 Volume 3, Attachment 2.1 ATTCP Certification Manual	☒	☐
Description of the Criteria and Review Process	Volume 3, Attachment 2.1 ATTCP Certification Manual	☒	☐

Discussion

NEMIC has proposed a certification process that requires three things of each ATT applicant. First, a signatory to a collective bargaining agreement that provides for contributions on behalf of its members directly to NEMIC (or a NEMIC instructor or other NEMIC participant). Second, the ATT applicant must be certified by either the International Certification Board (ICB, a function of NEMIC) or TABB-Certified for the Testing, Adjusting, and Balancing Specialty, and third, the applicant must hold an ITI Certificate of Completion. NEMIC verifies the eligibility of the ATT applicant by working with ITI and TABB (or ICB) to ensure that each ATT applicant holds valid certifications and collective bargaining associations. NEMIC notifies each ATT applicant of any action on their application (including approval, denial, or requests for more information). If approved, the ATT applicant may then sit for the proctored and sealed exam, given within the time limit provided. NEMIC will score the exam and notify the applicant of the results.

ICB/TABB Certification for the Testing, Adjusting, and Balancing Specialty require approximately 21 hours of examination to demonstrate competency in 19 separate areas of proficiency. These areas of proficiency fall into three general categories: core proficiency (basic mathematics, heat flow, mechanical and electrical systems, controls, hydronic systems, air distribution, induction and specialty systems); air proficiency (focusing exclusively on air distribution systems); and hydronic proficiency (focusing exclusively on hydronic distribution systems). The ITI Certification of Completion requires full in-class training and hands-on laboratory training regarding the mechanical acceptance tests as prescribed in Title 24, Part 1, Section 120.5 and Appendix NA 7. Both the ICB/TABB Certifications and the ITI Certification of Completion require and verify that each applicant has a minimum of three years of hands-on or on-job training by contacting references and journeyman who oversaw their apprenticeship.

NEMIC's proposed process relies on several certifications from ITI, TABB, and ICB. Because these organizations verify their own applications for certification, NEMIC can be reasonably assured that any individual certified by these organization is an adequately experienced and trained technician with an ability to understand and apply the Mechanical Acceptance Test

Technician certification training. Staff concurs that the process proposed by NEMIC is sufficient to satisfy the requirements of Section 10-103-B(3)(c)(B)(iii).

Section 10-103-B(c)(3)(B)(iv)

Instructor to Trainee Ratio. A sufficient ratio of instructors to participants in classroom and laboratory work to ensure integrity and efficacy of the curriculum and program. The ATTCP shall document in its application to the Energy Commission why its instructor to trainee ratio is sufficient based on industry standards and other relevant information.

Summary of Application Compliance
Table 10-103-B(c)(3)(B)(iv)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Documentation of Instructor to Trainee Ratio	Volume 3, Section 3.4	☒	☐

Discussion

ITI has been offering training programs since May 12, 1971, as a result of an employee welfare benefit plan to fund the training and development of apprentices and workers in the sheet metal industry. Additionally, NEMI has been training contractors since 1981. Both NEMI and ITI maintain a 1 to 20 instructor-trainee ratio for classroom instruction. For hands-on training in the laboratory or shop floor, the training ratio varies according to the complexity of the training, but stays within 1 to 6-12.

Based on the significant experience of both ITI and NEMI, staff agrees with the appliance and finds that these instructor to trainee ratios are adequate to comply with the requirements of Section 10-103-B(3)(c)(B)(iv).

Section 10-103-B(c)(3)(B)(v)

Tests. A written and practical test that demonstrates each certification applicant's competence in all specified subjects. The ATTCPs shall retain all results of these tests for five years from the date of the test.

Summary of Application Compliance
Table 10-103-B(c)(3)(B)(v)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Retention of ATT Testing Results	Volume 3, Attachment 2.1	☒	☐

Discussion

NEMIC and TABB are ISO/IEC 17024 certified and as a result have significant independent oversight of certification activities. (See Section 10-103-B(c)(3)(F).) This includes the ATT Certification process which NEMIC is proposing via its application. Part of the ISO/IEC

17024 accreditation includes the review of tests, test development, and testing results, which includes the requirement for NEMIC to maintain these results for more than five years.

As part of its ISO/IEC 17024 continuing certification, the applicant must maintain any testing requirements to an exacting standard to ensure relevancy to the subject material, competent testing results and testing security of not only the test questions, but also the testing taking environment. One of the objectives of these ISO/IEC 17024 requirements in connection with testing is to better ensure that the tested subject is competent in the subject materials.

Staff has reviewed the Technician Certification Exam Questions submitted by the applicant and considers the exam questions to be comprehensive with regards to the acceptance testing requirements, the 2013 Standards and the requirements of the applicant's proposed ATTCP program. Staff concurs with the applicant that the exam is sufficient to ensure that an ATT receiving a passing score has learned the subject material and has demonstrated sufficient competency to successfully perform mechanical acceptance tests, complete the necessary acceptance test forms and appropriately submit those forms to the necessary regulating agencies.

Therefore, staff finds that since the applicant is accredited under ISO/IEC 17024 which requires test results to be maintained for more than five years and that the examination question submitted by the applicant are sufficient to ensure the competency of the ATT, the applicant satisfies the requirements of Section 10-103-B(c)(3)(B)(v).

Section 10-103-B(c)(3)(B)(vi)

Re-certification. Requirements and Procedures for recertification of Acceptance Test Technicians each time the Building Energy Efficiency Standards is updated with new and/or modified acceptance test requirements. *Recertification requirements and procedures shall only apply to those specific elements that are new and/or modified in future updates to Building Energy Efficiency Standards.*

Summary of Application Compliance

Table 10-103-B(c)(3)(B)(vi)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Discussion of Recertification Procedures	Volume 3, Attachment 2.1	☒	☐

Discussion

In its draft ATTCP Certification Manual, the applicant requires renewal of certification for all Certification holders (ATTs and ATEs) after the Energy Commission has revised pertinent sections of the Standards that deal with mechanical acceptant tests. At the time of

renewal, each Certificate holder must meet all qualifications and requirements as for the initial certification.

The ATE applicant must be a signatory to a collective bargaining agreement that provides for contributions on behalf of its members directly to NEMIC and be current with all financial obligations under that collective bargaining agreement.

The ATE applicant must also hold a Certificate of Completion from NEMI regarding training on mechanical acceptance testing mandates and procedures as specified by the latest version of the Energy Code. The ATT must (1) be a signatory to a collective bargaining agreement that provides for contributions on behalf of its members directly to NEMIC (or a NEMIC instructor or other NEMIC participant); (2) be certified by either the ICB or TABB-Certified for the Testing, Adjusting and Balancing Specialty; and (3) hold an ITI Certificate of Completion.

Both ATT and ATE must take and pass the relevant testing to renew their Certifications. These requirements are substantial and sufficient to comply with Section 10-103-B(c)(3)(B)(vi).

Section 10-103-B(c)(3)(C)

Mechanical Acceptance Test Employer Training. Training for Mechanical Acceptance Test Employers shall consist of a single class or webinar consisting of at least four hours of instruction that covers the scope and process of the acceptance tests in Building Energy Efficiency Standards, Section 120.5.

Summary of Application Compliance

Table 10-103-B(c)(3)(C)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Minimum Employer Training - Not Less Than Four Hours - Covers Section 120.5	Volume 2, Section 2.0 Volume 3, Attachment 2.2	☒	☐

Discussion

The training proposed by NEMIC goes far beyond the minimum four-hour requirement (see discussion under Section 10-103-B(c)(2)). ATEs will be trained by NEMI to be knowledgeable about the California Code of Regulations Title 24, Part 1, Section 10-102 and 10-103-B and Part 6 Section 120.5 (which are the controlling regulations for the acceptance testing requirements); the 2013 Energy Code and 2013 Nonresidential Appendix NA 7 with

specific attention for NA 7.5 (which is the Mechanical Systems Acceptance Tests procedures).

While the applicant did not estimate the necessary time to perform this training, they presumed that it was far more than the minimum four hours. Based on the review of the training materials submitted and staff's training experience, staff estimates that the minimum time to complete the training will be approximately six hours. The training materials provided cover all the requirements in Section 120.5; therefore staff finds that the application adequately complies with Section 10-103-B(c)(3)(C).

Section 10-103-B(c)(3)(D)

Complaint Procedures. Procedures described in writing for notifying building departments and the public that the Acceptance Test Certification Provider will accept complaints regarding the performance of any certified acceptance test technician or employer, and procedures for how the Provider will address these complaints.

Summary of Application Compliance
Table 10-103-B(c)(3)(D)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Notification to Building Departments	Volume 3, Attachment 2.1, Section 2.6	☒	☐
Procedures for Accepting Complaints	Volume 3, Attachment 2.1, Section 2.6	☒	☐
Procedures for Addressing Complaints	Volume 3, Attachment 2.1, Section 2.6	☒	☐

Discussion

NEMIC discusses the procedures for accepting and resolving complaints regarding ATT or ATE actions in the draft ATTCP Certification Manual under Section 2.6. Any complaint must be filed within ten days of the claimant's knowledge of the complaint with the NEMIC ATTCP Administrator (or the Registry, if the Registry is active). Complaint resolution steps may include: initial review, administrative hearing, NEMIC Board review, possible third party inspection, resolution hearing, NEMIC Board decision, and filing with the Registry (if available). The NEMIC Board decision may include sanctions and revocation of certification. NEMIC will make this process public and available upon approval of its application, but this is currently one of the items that NEMIC has submitted to the Energy Commission under confidentiality. The complaint resolution process will be included in training and outreach materials to be made available to local building departments. The proposed complaint resolution process is reasonably public and fair to both the claimant and the ATT/ATE and includes many opportunities for resolution. Because the process does require relatively quick initial action on the part of the claimant, it is critical that NEMIC follow through on their proposal to make the initial submittal process electronically

accessible. Staff finds that these procedures are reasonable and strike a fair balance between the claimant and the ATT/ATE. Therefore, staff finds that the proposes procedures are sufficient to comply with the requirements of Section 10-103-B(c)(3)(D).

As stated in the application, NEMIC will implement these features through its website. Because this website will not be active until at least 90 days after NEMIC is approved as an ATTCP by the Energy Commission, NEMIC has not met this requirement. Energy Commission staff recommends that the implementation of the website be a Condition of approval. With this Condition of approval, Energy Commission staff finds that the applicant has met the requirements of Section 10-103-B(c)(3)(D).

Section 10-103-B(c)(3)(E)

Certification Revocation Procedures. Procedures described in writing for revoking the certification of Acceptance Test Technicians and Employers 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 or other specified actions that justify decertification.

Summary of Application Compliance
Table 10-103-B(c)(3)(E)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Procedures For Revocation of Certification	Volume 3, Attachment 2.1, Section 2.4	☒	☐

Discussion

NEMIC discusses the procedures for revoking an ATT or ATE certification in the draft ATTCP Certification Manual under Section 2.4. The ATTCP may revoke the Certification of an ATT or ATE as the result of a NEMIC Board decision from a complaint resolution procedure (see discussion under Section 10-103-B(c)(3)(D) above), falsification of the initial or renewal application, or failure to meet eligibility requirements. Under Section 2.5 of the NEMIC ATTCP Certification Manual, applicants may seek to object to an ATTCP act as it pertains to Certification decisions. The applicant may begin a "general" objection within 10 days of notification of that their certification is revoked. The procedures that follow include: initial review of the objection, administrative hearing, possible review by the NEMIC Board and Board decision. Staff finds that these procedures are reasonable and strike a fair balance between an ATT/ATE and the NEMIC ATTCP. Therefore, staff finds that the proposed procedures are sufficient to comply with the requirements of Section 10-103-B(c)(3)(E).

Section 10-103-B(c)(3)(F)

Quality Assurance and Accountability. The ATTCPs shall describe in their applications to the Energy Commission how their certification business practices include quality assurance, independent oversight, and accountability measures such as independent 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 Building Energy Efficiency Standards, Section 120.5. Independent oversight may be demonstrated by accreditation under the ISO/IEC 17024 standard.

Summary of Application Compliance
Table 10-103-B(c)(3)(F)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Quality Assurance	Volume 3, Section 6	☒	☐
Independent Oversight	ISO/IEC 17024 Compliance	☒	☐
Accountability Measures	ISO/IEC 17024 Compliance Volume 3, Attachment 2.1, Sections 2.4, 2.5	☒	☐

Discussion
Section 10-103-B(c)(3)(F) does not state whether accreditation under the ISO/IEC 17024 standard demonstrates compliance with the quality assurance or accountability requirements of Section 10-103-B(c)(3)(F). Because the ISO/IEC 17024 standard includes measures to ensure both quality assurance and accountability, it is possible that if an ATTCP is accredited, then the ATTCP effectively meets most of the requirements of Section 10-103-B(c)(3)(F). However, Energy Commission staff must ensure that providers explain how their applications meet the particular criteria of Section 10-103-B(c)(3)(F), since the ISO/IEC standard is not specific to technician certification. For example, the ISO/IEC standard does not necessarily require site visits or building department surveys, but Section 10-103-B(c)(3)(F) lists these examples as appropriate quality assurance and accountability measures. Providers must demonstrate how their program provides quality assurance and accountability.

Quality Assurance: Section 10-103-B(c)(3)(F) requires ATTCPs to how their certification business practices include quality assurance measures. The ISO/IEC 17024 standard has the following quality assurance measures:

- The standard requires certification schemes to include: criteria for initial certification and recertification; assessment methods for initial certification and recertification; surveillance methods and criteria (if applicable–this could include site visits); and criteria for suspending and withdrawing certification. (ISO/IEC 17024:2012(E), § 8.3, subds. (a)-(d), see also § 9.6.3, subd. (h).)
  - This is provided in a supplemental submission from the applicant dated February 26, 2015.

- "The certification body shall have a policy and (a) documented procedure(s) for suspension or withdrawal of the certification, or reduction of the scope of

certification, which shall specify the subsequent actions by the certification body." (ISO/IEC 17024:2012(E), § 9.5.1; see also § 9.9 [Complaints].)
    - This is provided in section 2.4 of the Draft NEMIC ATTCP Certification Manual.

- If an applicant has been decertified, the certification body, in deciding whether to recertify an applicant, "shall consider at least" certain criteria including: on-site assessment; and confirmation of continuing satisfactory work and work experience records. (ISO/IEC 17024:2012(E), § 9.6.5, subds. (a), (d).)
    - This is provided in section 2.5 of the Draft NEMIC ATTCP Certification Manual.

- "The certification body has a responsibility to ensure that only those persons who demonstrate competence are awarded certification." (ISO/IEC 17024:2012(E), Annex A (informative) § A.1.3.)
    - This is provided in section 2.0, 3.0, and 4.0 of the Draft NEMIC ATTCP Certification Manual.

The NEMIC Application discusses its quality assurance program, which has three major components:

- Quality assurance of NEMIC Business Practices including NEMIC as an ATTCP,
- Quality assurance of the certification process and ongoing certifications,
- Quality assurance of certified ATTs.

The first two bulleted items rely heavily on the fact that NEMIC (through ICB and TABB) is certified under the ISO/IEC 17024 standard and the corresponding ANSI Certification of Accreditation. After careful review of the ISO/IEC 17024 and ANSI reporting requirements, staff concurs that the first two bulleted items are more than adequate to assure the quality of NEMIC business practices and certification process.

The final bulleted item (quality assurance of certified ATTs) will include the following components[8]:

1. A paper audit program will be instituted as described below.

    a. All ATTs will have a completed paper audit within the first year of operation of the ATTCP and every three years thereafter coincident with the Building Code Update cycle. All newly certified ATTs will have a completed paper audit within the first year following their certification and every three years thereafter coincident with the Building Code Update cycle.

[8] NEMIC California 2013 Title 24 Building Standards Mechanical Acceptance Testing Quality Assurance Program Version 150225, February 26, 2015.

b. Each audit will review a minimum of 5 percent of each type of Mechanical Acceptance Test form electronically submitted by the ATT to the ATTCP with a minimum of not less than 5 forms for each type of form audited.

c. The auditor will pull the Acceptance Test Compliance forms from the mechanical plans and note which mechanical acceptance tests should have been completed.

d. The auditor will compare if all the mechanical acceptance tests on all pieces of equipment, as noted in the compliance forms, have been completed. If they have, then the auditor will continue with the audit; if not, the audit is failed.

e. Assuming all required mechanical acceptance tests have been completed, the auditor will review each and every mechanical acceptance form to determine if the form was properly filled out, i.e., if the proper information has been provided and all the appropriate checks listed. There will be a checklist that the auditor will complete for each reviewed form. Only when each and every form has been satisfactorily reviewed will the audit be considered successful.

2. If the ATT fails the paper audit, a second paper audit of a different project the ATT worked on will be conducted. If the ATT fails the second audit, he or she will be decertified. If the ATE, who employed the "failed" ATT, has more than one ATT working for the firm, a paper audit will be performed on another ATT working for the same ATE. If that ATT fails the audit as well, he or she will be decertified along with the ATE.

3. The paper audits will be performed by subject matter experts, i.e., TABB supervisors with current TABB certifications or retired TABB supervisors who held the TABB supervisor certification for a minimum of five years, who will be trained in the requirements of the Energy Code.

4. The results of each audit will be reported to the Registry.

Section 10-103-B(c)(3)(F) specifically lists "visits to building sites where certified technicians are completing acceptance tests" as an option for demonstrating quality assurance. The ISO/IEC standard requires more quality assurance measures than just site visits, but the ISO/IEC standard does not state that site visits, or surveillance activities, are required for a certification provider to be accredited under the standard. The standard only requires surveillance if it is applicable to the certification scheme of the certification provider. (ISO/IEC 17024:2012(E), § 8.3, subds. (a)-(d); see also § 9.6.3, subd. (h)). Furthermore, the

applicant states in the reply to staff request for further information[9] that, in their opinion, such a site visit based program cannot be put in place since legally, a site visit by any NEMIC QA Auditor can be refused by any of the responsible building project parties (e.g., building owner, architect, general contractor, or the engineer of record).

While the proposed quality assurance program does not include site visits, it does propose a substantial paper audit, which staff agrees will provide reasonable quality control for certified ATTs. Staff bases this conclusion on the following elements: (1) The ISO/IEC 17024 standard requires surveillance if it is applicable to the certification scheme of the certification provider, which in this case, it is. (2) The paper audit quality assurance program proposed by the applicant is substantial and achievable with significant repercussions for the ATT and ATE.

Independent Oversight: Section 10-103-B(c)(3)(F) states that independent oversight may be demonstrated by accreditation under the ISO/IEC 17024 standard. The ISO/IEC 17024 standard requires certification providers to comply with:

- Impartiality and conflict of interest measures. (See, e.g., ISO/IEC 17024:2012(E), §§ 4.3, 5.1.1, 5.2.1, 5.2.3, 6.1.8, 6.2.1, 6.2.2.1, 6.2.2.3, 6.2.3.2, 6.3.1, 9, 7.4; see also Annex A [informative] §§ A.2., A.3., and A.6.) These measures require: impartiality in the certification process, avoidance of conflicts of interest in the process, monitoring of examiners, maintenance of confidentiality, prevention of fraudulent examination processes, etc.[10]

- Certification scheme review and validation measures. (ISO/IEC 17024:2012(E), §§ 8.4-8.6.) These sections of the standard require an ATTCP to demonstrate that, "in the development and review of the certification scheme, the following are included: (a) the involvement of appropriate experts…." (§ 8.4.) In addition, an ATTCP "shall ensure that the certification scheme is reviewed and validated on an ongoing, systematic basis." (§ 8.5.)

- Management system measures to ensure that the management system "is capable of supporting and demonstrating the consistent achievement of the requirements of [this ISO/IEC standard]." (ISO/IEC 17024:2012(E), §§ 10.1, 10 [generally].)

- Review of management system. (ISO/IEC 17024:2012(E), §§ 10.2.5.) Compliance with this section requires an ATTCP to "establish procedures to review its management system at planned intervals, in order to ensure its

[9] Ibid.

[10] Ibid.

continuing suitability, adequacy and effectiveness, including the stated policies and objectives related to the [fulfillment] of this [standard]." (§ 10.2.5.1.)

- Internal audits to verify that the certification provider fulfills the requirements of the ISO/IEC standard. (ISO/IEC 17024:2012(E), § 10.2.6.) Under these requirements, ATTCPs must "establish procedures for internal audits to verify that it [fulfills] the requirements of this [standard] and that the management system is effectively implemented and maintained." (§ 10.2.6.1.)

Independent oversight, which may be demonstrated by accreditation under the ISO/IEC 17024 standard, is reflected in all of the above examples because Section 10-103-B(c)(3)(F) specifically states that ATTCPs may establish independent oversight by proving accreditation under the standard. Section 10-103-B(c)(3)(F) lists independent oversight examples, like certification process evaluations and expert review of the training curricula. The ISO/IEC standard has these measures and additional similar measures, so an ATTCP does not need to prove that its program contains such measures if the ATTCP is accredited.

The applicant is accredited under the ISO/IEC 17024 standard and thus has adequate independent oversight measures as required by Section 10-103-B(c)(3)(F).

Accountability: Section 10-103-B(c)(3)(F) requires an ATTCP to describe in its application to the Commission how its certification business practices include accountability measures.

The ISO/IEC 17024 requires measures pertaining to surveillance of certified persons if those measures are specified in the certification provider's certification scheme. (ISO/IEC 17024:2012(E), § 8.3, subds. (a)-(d); see also § 9.6.3, subd. (h).) In addition, 17024 also requires certification providers to have a policy and documented procedures for suspension or decertification, and the certification provider must specify, in its procedures, the subsequent actions the certification provider will take relating to the suspension or decertification. (ISO/IEC 17024:2012(E), § 9.5.1.)

The ISO/IEC standard does not specifically state how the certification body shall determine that a certified person deserves decertification, but the certification body must specify its procedure for decertification in order to be accredited under the standard. The applicant has provided this decertification procedure in the Draft NEMIC ATTCP Certification Manual, Sections 2.4 and 2.5, and staff finds the procedure to be adequate.

Section 10-103-B(c)(3)(G)
Certification Identification Number and Verification of ATT Certification Status. Upon certification of an ATT, the ATTCP shall issue a unique certification identification number to the ATT. The ATTCP shall maintain an accurate record of the certification status for all

ATTs that the ATTCP has certified. The ATTCP shall 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-B, 10-102, 10-103(a)4, and Reference Joint Appendix JA7.

Summary of Application Compliance
Table 10-103-B(c)(3)(G)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Issue Certification ID	Volume 3, Section 7	☒	☐
Maintain Records of Certified ATTs	Volume 3, Section 7	☒	☐
Provide Verification of Current ATTs Status	Volume 3, Section 7	☒	☐

Discussion
The NEMIC ATTCP will launch and maintain a website that will be available to enforcement agency personnel and the public 90 days after the Energy Commission has approved the NEMIC application. Each Certified ATT or ATE will be issued a unique certification number. The website will be a repository for all information concerning the NEMIC ATTCP including the status of all certified ATTs and ATEs. The status is limited to three possibilities: Certification is Current, Certification is on Hold or Under Review, and Certification is Revoked. Only ATTs with a "Current" status may perform work. Additionally, the website will be linked to a database that will show the pertinent contact information about the ATTs and ATEs, and will include which ATEs employ each ATT. The website will also provide a means for filling complaints about the performance of ATTs.

This database will be readily accessible to enforcement agencies as well as the public and registration providers via the proposed website. The database will include the unique identification number and status of each certified ATT and these records will be maintained by the NEMIC ATTCP. While, staff agrees with the applicant that this database with web-access will satisfy the requirements of Section 10-103-B(c)(3)(G), the fact that this website is not already launch mean that this requirement is not satisfied. Energy Commission staff recommends that the implementation of the website be a Condition of approval. With this Condition of approval, Energy Commission staff finds that the applicant has met the requirements of Section 10-103-B(c)(3)(D).

Attachment 1

Compliance Summary of NEMIC Application

Summary Table of Application Compliance with Title 24, Chapter 10, Part 1, Section 10-103-B(c)

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Section 10-103(C)(1)			
Organization Type	Volume 1, Section 1.2 This Is A 501(C)(6) – Joint Labor Management Trust	☒	☐
Ownership Structure	Volume 1, Section 1.1 Volume 1, Section 1.3	☒	☐
By-Laws	Volume 1, Attachments 1.2, 1.2 And 1.3, Which Are In Order: NEMIC Trust Agreement ITI Trust Agreement NEMI Articles Of Incorporation Under separate cover SMART Articles of Incorporation SMACNA Articles of Incorporation	☒	☐
Quality Assurance Of The Certification Process	Volume 1, Section 1.3	☒	☐
Independent Oversight	Volume 1, Section 1.1 The Applicant Is Submitting Their Compliance With ISO/IEC 17024 Standards Compliance.	☒	☐
Supervision	Volume 1, Section 1.3	☒	☐
Support of Acceptance Test Training And Certification Processes	Volume 1, Section 1.1	☒	☐
Section 10-103(C)(2)			
Certification of ATE	Volume 2, Section 2.0	☒	☐
Oversight of ATE	Volume 2, Section 2.0	☒	☐
Section 10-103(C)(3)(A)			
Theoretical Training	Volume 3, Section 3.2.1	☒	☐
Hands-On Experience	Volume 3, Section 3.2.2	☒	☐
Section 10-103(C)(3)(B)(I)			
Constant Volume System Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Variable Volume System Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Air-Side Economizers	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Air Distribution System Leakage	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Demand Controlled Ventilation With CO2 Sensors	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Automatic Demand Shed Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Hydronic Valve Leakage	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Hydronic System Variable Flow Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Supply Air Temperature Reset Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Condenser Water Temperature Reset Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Outdoor Air Ventilation Systems	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Supply Fan Variable Flow Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Boiler And Chiller Isolation Controls	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Fault Detection And Diagnostics For Packaged Direct-Expansion Units	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Automatic Fault Detection And Diagnostics For Air Handling Units And Zone Terminal Units	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Distributed Energy Storage Direct-Expansion Air Conditioning Systems	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Thermal Energy Storage Systems	Volume 3, Attachment 3.1, Pages 46 Through 51; And Volume 3, Table on Page 12: Curricula Topics	☒	☐
Energy Code Mechanical Acceptance Testing Procedures	Volume 3, Attachment 9.1 Through 9.9	☒	☐
Energy Code Acceptance Testing Compliance Documentation For Mechanical Systems	Volume 3, Attachment 9.1 Through 9.9	☒	☐
Section 10-103(C)(3)(B)(ii)			
Hands-On Experience	Volume 3, Section 3.2.2	☒	☐
Section 10-103(C)(3)(B)(iii)			
Three Years of Experience And Expertise In Mechanical Controls And Systems	Volume 3, Section 3.3 Volume 3, Attachment 2.1 ATTCP Certification Manual	☒	☐
Description of The Criteria And Review Process	Volume 3, Attachment 2.1 ATTCP Certification Manual	☒	☐
Section 10-103(C)(3)(B)(iv)			
Documentation of Instructor To Trainee Ratio	Volume 3, Section 3.4	☒	☐
Section 10-103(C)(3)(B)(V)			
Retention of ATT Testing Results	Volume 3, Attachment 2.1	☒	☐
Section 10-103(C)(3)(B)(vi)			
Discussion Of Recertification Procedures	Volume 3, Attachment 2.1	☒	☐
Section 10-103(C)(3)(C)			
Minimum Employer Training	Volume 2, Section 2.0 Volume 3, Attachment 2.2	☒	☐
Section 10-103(C)(3)(D)			

REQUIREMENT	APPLICATION LOCATION	ADEQUATE	INFORMATION REQUEST
Notification To Building Departments	Volume 3, Attachment 2.1, Section 2.6	☒	☐
Procedures For Accepting Complaints	Volume 3, Attachment 2.1, Section 2.6	☒	☐
Procedures For Addressing Complaints	Volume 3, Attachment 2.1, Section 2.6	☒	☐
Section 10-103(C)(3)(E)			
Procedures For Revocation of Certification	Volume 3, Attachment 2.1, Section 2.4	☒	☐
Section 10-103-B(C)(3)(F)			
Quality Assurance	Volume 3, Section 6	☒	☐
Independent Oversight	ISO/IEC 17024 Compliance	☒	☐
Accountability Measures	ISO/IEC 17024 Compliance Volume 3, Attachment 2.1, Sections 2.4, 2.5	☒	☐
Section 10-103-B(C)(3)(G)			
Issue Certification ID	Volume 3, Section 7	☒	☐
Maintain Records of Certified ATTs	Volume 3, Section 7	☒	☐
Provide Verification of Current ATTs Status	Volume 3, Section 7	☒	☐