October 16, 2012

California Energy Commission
Attention: Docket No. 12-BSTD-2
Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

California Energy Commission
DOCKETED
12-BSTD-2
TN #68410
OCT 24 2012

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Leon Flint, I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 2004. I have completed a 5 year HVAC System/ Sheet Metal Apprenticeship program.

I am submitting these comments in support of the Energy Commission's proposal to require certification of anyone performing Title 24 acceptance testing. The proposed Title 24 energy code update requires sophisticated inspections, but these inspections are useless unless performed by acceptance testers that have the skills, knowledge and ability to competently perform these inspections. Without high quality inspections, the code cannot be enforced, and we will not achieve our energy efficiency goals. I support the concept of taking advantage of the existing certification programs that are offered by NEBB, AABC and TABB. AABC, NEBB and TABB are respected, experienced national organizations that were created specifically to verify that HVAC systems perform as designed. Each of these organizations is accredited under ISO/IEC 17024, the internationally recognized standard for certification bodies. This accreditation ensures that TABB, NEBB and AABC have the existing infrastructure and ability to address the challenges of providing training and certification for Title 24 HVAC acceptance test technicians, supervisors and employers. Because these programs are already established, they have the capability to immediately start providing California acceptance testing certifications, ensuring that the benefits of this proposed regulation are achieved sooner rather than later.

While I support the designation of the specific TAB organizations as Acceptance Test Technician Certification Providers, I am concerned that the requirements for allowing other entities to also become Acceptance Test Technician Certification Providers may not be rigorous enough. Approval of an Acceptance Test Technician Certification Provider should be based on adherence to the following minimum standards:

- The certification body should be tied to an organization that trains for broad occupational competency in building and construction, including in mechanical systems or in lighting systems.

- Certification Providers should be accredited or have demonstrated that the quality of their certification program has been reviewed and assessed by a representative panel of industry experts.

The regulations should also require that any application includes provision of all training and testing procedures, manuals, handbooks and materials and a detailed explanation of how the efficacy of the training curriculum content and methods was evaluated and verified.

Sincerely,

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Attention: Docket No. 12-BSTD-2
Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Kevin Siebert, I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 04'. I have completed a 5 year HVAC System/ Sheet Metal Apprenticeship program.

I am submitting these comments in support of the Energy Commission's proposal to require certification of anyone performing Title 24 acceptance testing. The proposed Title 24 energy code update requires sophisticated inspections, but these inspections are useless unless performed by acceptance testers that have the skills, knowledge and ability to competently perform these inspections. Without high quality inspections, the code cannot be enforced, and we will not achieve our energy efficiency goals. I support the concept of taking advantage of the existing certification programs that are offered by NEBB, AABC and TABB. AABC, NEBB and TABB are respected, experienced national organizations that were created specifically to verify that HVAC systems perform as designed. Each of these organizations is accredited under ISO/IEC 17024, the internationally recognized standard for certification bodies. This accreditation ensures that TABB, NEBB and AABC have the existing infrastructure and ability to address the challenges of providing training and certification for Title 24 HVAC acceptance test technicians, supervisors and employers. Because these programs are already established, they have the capability to immediately start providing California acceptance testing certifications, ensuring that the benefits of this proposed regulation are achieved sooner rather than later.

While I support the designation of the specific TAB organizations as Acceptance Test Technician Certification Providers, I am concerned that the requirements for allowing other entities to also become Acceptance Test Technician Certification Providers may not be rigorous enough. Approval of an Acceptance Test Technician Certification Provider should be based on adherence to the following minimum standards:

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The regulations should also require that any application includes provision of all training and testing procedures, manuals, handbooks and materials and a detailed explanation of how the efficacy of the training curriculum content and methods was evaluated and verified.

Sincerely,

Kevin Siebert

October 16, 2012

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Attention: Docket No. 12-BSTD-2
Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Matt Richard, I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 1989. I have completed a 4½ year HVAC System/ Sheet Metal Apprenticeship program.

I am writing to support the Energy Commission's proposed regulations requiring certification for persons who perform Title 24 Acceptance Testing and Documentation for HVAC and advanced lighting control. Proper training and certification of individuals performing and documenting acceptance tests is crucial for California to realize its energy efficiency goals. Furthermore, I strongly support the Commission's decision to utilize existing programs to provide this certification rather than completely reinventing the wheel as was done with the HERS program. The TAB certification bodies identified as pre-approved certifiers are well-respected, nationally-renowned programs with rigorous curriculum, hands on training, and quality controls. TAB technicians are already available throughout the state and no other certifications exist that provide the training expertise and quality control necessary to ensure that HVAC systems actually perform as required under Title 24. The California Green Building Code already requires small commercial buildings to balance their HVAC systems in accordance with TABB, AABC or NEBB procedures, so this requirement will ensure consistency with current practices.

I also strongly support the pre-approval of existing TABB, NEBB and AABC contractors and technicians to perform these acceptance tests. These contractors and technicians should be rewarded for having invested in this advanced training before such training was even a requirement under Title 24. Moreover, they currently are the only technicians with verifiable training and experience in the skills and knowledge necessary to ensure competent testing, adjusting and balancing of commercial HVAC systems.

I also support the requirement for certification of acceptance test technician employers in order to ensure a high level of accountability and quality control. Certification of employers ensures appropriate supervision and support for the certified acceptance test technicians. By putting the employer's certification on the line in addition to the certified technician, pressure on the technician to quickly test and pass a system is reduced and it is more likely that the technician will be provided sufficient equipment, resources and time to correctly perform the acceptance test.

Sincerely,

October 16, 2012

California Energy Commission
Attention: Docket No. 12-BSTD-2
Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is [illegible], I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 1999 I have completed a 4 1/2 year HVAC System/ Sheet Metal Apprenticeship program.

I am writing to support the Energy Commission's proposed regulations requiring certification for persons who perform Title 24 Acceptance Testing and Documentation for HVAC and advanced lighting control. Proper training and certification of individuals performing and documenting acceptance tests is crucial for California to realize its energy efficiency goals. Furthermore, I strongly support the Commission's decision to utilize existing programs to provide this certification rather than completely reinventing the wheel as was done with the HERS program. The TAB certification bodies identified as pre-approved certifiers are well-respected, nationally-renowned programs with rigorous curriculum, hands on training, and quality controls. TAB technicians are already available throughout the state and no other certifications exist that provide the training expertise and quality control necessary to ensure that HVAC systems actually perform as required under Title 24. The California Green Building Code already requires small commercial buildings to balance their HVAC systems in accordance with TABB, AABC or NEBB procedures, so this requirement will ensure consistency with current practices.

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Sincerely,

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Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Adam Wood, I am currently a 2 year Apprentice in the HVAC System/Sheet Metal Apprenticeship Program.

I am submitting these comments in support of the Energy Commission's proposal to require certification of anyone performing Title 24 acceptance testing. The proposed Title 24 energy code update requires sophisticated inspections, but these inspections are useless unless performed by acceptance testers that have the skills, knowledge and ability to competently perform these inspections. Without high quality inspections, the code cannot be enforced, and we will not achieve our energy efficiency goals. I support the concept of taking advantage of the existing certification programs that are offered by NEBB, AABC and TABB. AABC, NEBB and TABB are respected, experienced national organizations that were created specifically to verify that HVAC systems perform as designed. Each of these organizations is accredited under ISO/IEC 17024, the internationally recognized standard for certification bodies. This accreditation ensures that TABB, NEBB and AABC have the existing infrastructure and ability to address the challenges of providing training and certification for Title 24 HVAC acceptance test technicians, supervisors and employers. Because these programs are already established, they have the capability to immediately start providing California acceptance testing certifications, ensuring that the benefits of this proposed regulation are achieved sooner rather than later.

While I support the designation of the specific TAB organizations as Acceptance Test Technician Certification Providers, I am concerned that the requirements for allowing other entities to also become Acceptance Test Technician Certification Providers may not be rigorous enough. Approval of an Acceptance Test Technician Certification Provider should be based on adherence to the following minimum standards:

- The certification body should be tied to an organization that trains for broad occupational competency in building and construction, including in mechanical systems or in lighting systems.
- Certification Providers should be accredited or have demonstrated that the quality of their certification program has been reviewed and assessed by a representative panel of industry experts.

The regulations should also require that any application includes provision of all training and testing procedures, manuals, handbooks and materials and a detailed explanation of how the efficacy of the training curriculum content and methods was evaluated and verified.

Sincerely,

October 16, 2012

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Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Jason Davidson, I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 1995. I have completed a 5 year HVAC System/ Sheet Metal Apprenticeship program.

I am writing to support the Energy Commission proposal to require Title 24 acceptance tests for nonresidential buildings to be performed by field technicians that have met specific experience, training and certification requirements. Certification will ensure that acceptance testing is correctly performed and will significantly reduce the incidence of HVAC systems being poorly installed and operating below their specified efficiency. Effective testing and adjusting of commercial HVAC systems requires a unique mix of experience, training and competence. Improper installation and inadequate acceptance testing will result in reduced energy efficiency and sub-standard performance. The TAB organizations identified in the regulation are the only entities that currently provide certification that ensures a technician has the proper experience, knowledge, and competence to properly perform such testing. Since these programs already exist, it simply makes sense to take advantage of what they have to offer. Accordingly, we strongly support the Commission's reliance on certification by these entities..

I am concerned that the proposed regulations do not provide rigorous enough prequalification requirements. Training and competency testing must go beyond just teaching a lay person a generic "acceptance test." This is not sufficient to ensure the real world ability to properly test and adjust commercial HVAC systems. Acceptance testing training necessarily builds upon the knowledge and experience base possessed by electrical or mechanical system professionals. No test is going to be able to cover every permutation of commercial HVAC systems as installed in real world situations. Accordingly, most persons without a basic knowledge and experience base in these systems would be unable to effectively apply this training in complex real world situations, even if they were able to successfully pass a classroom test. To ensure effective acceptance testing, it is critical to ensure that acceptance testers have the underlying background and experience in these systems to be able to adjust to the complexities and permutations that a tester will encounter out in the field.

The certifications should, at a minimum, require completion of the following components:

- Post-secondary training in a state-approved or nationally accredited educational program (including the state-certified apprenticeship system; nationally accredited colleges and universities), with the training institutions or types of training institutions identified by the CEC.
- A minimum number of hours of work experience equal to or exceeding the number of hours to meet any contractor licensure, trade journey card, or any other licenses or regulations affecting contractors or workers working in the field.
- Training and competency testing that includes hands on training and testing.

The regulations should clearly require that training and competency testing include hands on training and testing. The certification should also be tied to a trade or professional organization with continuing education requirements for maintenance of good standing.

Sincerely,

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Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Art C Pierson I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 1978 I have completed a 4 year HVAC System/ Sheet Metal Apprenticeship program.

I am submitting these comments in support of the Energy Commission's proposal to require certification of anyone performing Title 24 acceptance testing. The proposed Title 24 energy code update requires sophisticated inspections, but these inspections are useless unless performed by acceptance testers that have the skills, knowledge and ability to competently perform these inspections. Without high quality inspections, the code cannot be enforced, and we will not achieve our energy efficiency goals. I support the concept of taking advantage of the existing certification programs that are offered by NEBB, AABC and TABB. AABC, NEBB and TABB are respected, experienced national organizations that were created specifically to verify that HVAC systems perform as designed. Each of these organizations is accredited under ISO/IEC 17024, the internationally recognized standard for certification bodies. This accreditation ensures that TABB, NEBB and AABC have the existing infrastructure and ability to address the challenges of providing training and certification for Title 24 HVAC acceptance test technicians, supervisors and employers. Because these programs are already established, they have the capability to immediately start providing California acceptance testing certifications, ensuring that the benefits of this proposed regulation are achieved sooner rather than later.

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The regulations should also require that any application includes provision of all training and testing procedures, manuals, handbooks and materials and a detailed explanation of how the efficacy of the training curriculum content and methods was evaluated and verified.

Sincerely, Art C. Peralta

October 16, 2012

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1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Chris Gremminger, I am currently a 3 year Apprentice in the HVAC System/Sheet Metal Apprenticeship Program.

I am submitting these comments in support of the Energy Commission's proposal to require certification of anyone performing Title 24 acceptance testing. The proposed Title 24 energy code update requires sophisticated inspections, but these inspections are useless unless performed by acceptance testers that have the skills, knowledge and ability to competently perform these inspections. Without high quality inspections, the code cannot be enforced, and we will not achieve our energy efficiency goals. I support the concept of taking advantage of the existing certification programs that are offered by NEBB, AABC and TABB. AABC, NEBB and TABB are respected, experienced national organizations that were created specifically to verify that HVAC systems perform as designed. Each of these organizations is accredited under ISO/IEC 17024, the internationally recognized standard for certification bodies. This accreditation ensures that TABB, NEBB and AABC have the existing infrastructure and ability to address the challenges of providing training and certification for Title 24 HVAC acceptance test technicians, supervisors and employers. Because these programs are already established, they have the capability to immediately start providing California acceptance testing certifications, ensuring that the benefits of this proposed regulation are achieved sooner rather than later.

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Chris Gremminger

The regulations should also require that any application includes provision of all training and testing procedures, manuals, handbooks and materials and a detailed explanation of how the efficacy of the training curriculum content and methods was evaluated and verified.

Sincerely,

Chris Greninger

October 16, 2012

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1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Charlie Hooker. I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 2001. I have completed a 4 year HVAC System/ Sheet Metal Apprenticeship program.

I am submitting these comments in support of the Energy Commission's proposal to require certification of anyone performing Title 24 acceptance testing. The proposed Title 24 energy code update requires sophisticated inspections, but these inspections are useless unless performed by acceptance testers that have the skills, knowledge and ability to competently perform these inspections. Without high quality inspections, the code cannot be enforced, and we will not achieve our energy efficiency goals. I support the concept of taking advantage of the existing certification programs that are offered by NEBB, AABC and TABB. AABC, NEBB and TABB are respected, experienced national organizations that were created specifically to verify that HVAC systems perform as designed. Each of these organizations is accredited under ISO/IEC 17024, the internationally recognized standard for certification bodies. This accreditation ensures that TABB, NEBB and AABC have the existing infrastructure and ability to address the challenges of providing training and certification for Title 24 HVAC acceptance test technicians, supervisors and employers. Because these programs are already established, they have the capability to immediately start providing California acceptance testing certifications, ensuring that the benefits of this proposed regulation are achieved sooner rather than later.

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The regulations should also require that any application includes provision of all training and testing procedures, manuals, handbooks and materials and a detailed explanation of how the efficacy of the training curriculum content and methods was evaluated and verified.

Sincerely, Charli Hook

October 18 2012

California Energy Commission
Attention: Docket No. 12-BSTD-2
Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Francisco Ortiz, I am currently a 5th year Apprentice in the HVAC System/Sheet Metal Apprenticeship Program.

I am writing to support the Energy Commission's proposed regulations requiring certification for persons who perform Title 24 Acceptance Testing and Documentation for HVAC and advanced lighting control. Proper training and certification of individuals performing and documenting acceptance tests is crucial for California to realize its energy efficiency goals. Furthermore, I strongly support the Commission's decision to utilize existing programs to provide this certification rather than completely reinventing the wheel as was done with the HERS program. The TAB certification bodies identified as pre-approved certifiers are well-respected, nationally-renowned programs with rigorous curriculum, hands on training, and quality controls. TAB technicians are already available throughout the state and no other certifications exist that provide the training expertise and quality control necessary to ensure that HVAC systems actually perform as required under Title 24. The California Green Building Code already requires small commercial buildings to balance their HVAC systems in accordance with TABB, AABC or NEBB procedures, so this requirement will ensure consistency with current practices.

I also strongly support the pre-approval of existing TABB, NEBB and AABC contractors and technicians to perform these acceptance tests. These contractors and technicians should be rewarded for having invested in this advanced training before such training was even a requirement under Title 24. Moreover, they currently are the only technicians with verifiable training and experience in the skills and knowledge necessary to ensure competent testing, adjusting and balancing of commercial HVAC systems.

I also support the requirement for certification of acceptance test technician employers in order to ensure a high level of accountability and quality control. Certification of employers ensures appropriate supervision and support for the certified acceptance test technicians. By putting the employer's certification on the line in addition to the certified technician, pressure on the technician to quickly test and pass a system is reduced and it is more likely that the technician will be provided sufficient equipment, resources and time to correctly perform the acceptance test.

Sincerely,

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California Energy Commission
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Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Daniel Young, I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 2006. I have completed a 5 year HVAC System/ Sheet Metal Apprenticeship program.

I am writing to support the Energy Commission proposal to require Title 24 acceptance tests for nonresidential buildings to be performed by field technicians that have met specific experience, training and certification requirements. Certification will ensure that acceptance testing is correctly performed and will significantly reduce the incidence of HVAC systems being poorly installed and operating below their specified efficiency. Effective testing and adjusting of commercial HVAC systems requires a unique mix of experience, training and competence. Improper installation and inadequate acceptance testing will result in reduced energy efficiency and sub-standard performance. The TAB organizations identified in the regulation are the only entities that currently provide certification that ensures a technician has the proper experience, knowledge, and competence to properly perform such testing. Since these programs already exist, it simply makes sense to take advantage of what they have to offer. Accordingly, we strongly support the Commission's reliance on certification by these entities..

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Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Rusty Simmons, I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 2003. I have completed a 5 year HVAC System/ Sheet Metal Apprenticeship program.

I am writing to support the Energy Commission's proposed regulations requiring certification for persons who perform Title 24 Acceptance Testing and Documentation for HVAC and advanced lighting control. Proper training and certification of individuals performing and documenting acceptance tests is crucial for California to realize its energy efficiency goals. Furthermore, I strongly support the Commission's decision to utilize existing programs to provide this certification rather than completely reinventing the wheel as was done with the HERS program. The TAB certification bodies identified as pre-approved certifiers are well-respected, nationally-renowned programs with rigorous curriculum, hands on training, and quality controls. TAB technicians are already available throughout the state and no other certifications exist that provide the training expertise and quality control necessary to ensure that HVAC systems actually perform as required under Title 24. The California Green Building Code already requires small commercial buildings to balance their HVAC systems in accordance with TABB, AABC or NEBB procedures, so this requirement will ensure consistency with current practices.

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Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Cruz Cesa, I am currently a 5th year Apprentice in the HVAC System/Sheet Metal Apprenticeship Program.

I am submitting these comments in support of the Energy Commission's proposal to require certification of anyone performing Title 24 acceptance testing. The proposed Title 24 energy code update requires sophisticated inspections, but these inspections are useless unless performed by acceptance testers that have the skills, knowledge and ability to competently perform these inspections. Without high quality inspections, the code cannot be enforced, and we will not achieve our energy efficiency goals. I support the concept of taking advantage of the existing certification programs that are offered by NEBB, AABC and TABB. AABC, NEBB and TABB are respected, experienced national organizations that were created specifically to verify that HVAC systems perform as designed. Each of these organizations is accredited under ISO/IEC 17024, the internationally recognized standard for certification bodies. This accreditation ensures that TABB, NEBB and AABC have the existing infrastructure and ability to address the challenges of providing training and certification for Title 24 HVAC acceptance test technicians, supervisors and employers. Because these programs are already established, they have the capability to immediately start providing California acceptance testing certifications, ensuring that the benefits of this proposed regulation are achieved sooner rather than later.

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October 16, 2012

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Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is MICHAEL P. McMAHON I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 1996. I have completed a 5 year HVAC System/ Sheet Metal Apprenticeship program.

I am writing to support the Energy Commission's proposed regulations requiring certification for persons who perform Title 24 Acceptance Testing and Documentation for HVAC and advanced lighting control. Proper training and certification of individuals performing and documenting acceptance tests is crucial for California to realize its energy efficiency goals. Furthermore, I strongly support the Commission's decision to utilize existing programs to provide this certification rather than completely reinventing the wheel as was done with the HERS program. The TAB certification bodies identified as pre-approved certifiers are well-respected, nationally-renowned programs with rigorous curriculum, hands on training, and quality controls. TAB technicians are already available throughout the state and no other certifications exist that provide the training expertise and quality control necessary to ensure that HVAC systems actually perform as required under Title 24. The California Green Building Code already requires small commercial buildings to balance their HVAC systems in accordance with TABB, AABC or NEBB procedures, so this requirement will ensure consistency with current practices.

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Sincerely,

MICHAEL P. McMAHON

Mel P. McMahon

October 16, 2012

California Energy Commission
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Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

Re: Support for Proposed Non-Residential Acceptance Contractor/Tester Certification

Dear Commissioners:

My name is Nicholas Kay, I am an HVAC Journeyperson. I have been in the HVAC System Installation Trade since 2006. I have completed a 5 year HVAC System/ Sheet Metal Apprenticeship program.

I am writing to support the Energy Commission proposal to require Title 24 acceptance tests for nonresidential buildings to be performed by field technicians that have met specific experience, training and certification requirements. Certification will ensure that acceptance testing is correctly performed and will significantly reduce the incidence of HVAC systems being poorly installed and operating below their specified efficiency. Effective testing and adjusting of commercial HVAC systems requires a unique mix of experience, training and competence. Improper installation and inadequate acceptance testing will result in reduced energy efficiency and sub-standard performance. The TAB organizations identified in the regulation are the only entities that currently provide certification that ensures a technician has the proper experience, knowledge, and competence to properly perform such testing. Since these programs already exist, it simply makes sense to take advantage of what they have to offer. Accordingly, we strongly support the Commission's reliance on certification by these entities..

I am concerned that the proposed regulations do not provide rigorous enough prequalification requirements. Training and competency testing must go beyond just teaching a lay person a generic "acceptance test." This is not sufficient to ensure the real world ability to properly test and adjust commercial HVAC systems. Acceptance testing training necessarily builds upon the knowledge and experience base possessed by electrical or mechanical system professionals. No test is going to be able to cover every permutation of commercial HVAC systems as installed in real world situations. Accordingly, most persons without a basic knowledge and experience base in these systems would be unable to effectively apply this training in complex real world situations, even if they were able to successfully pass a classroom test. To ensure effective acceptance testing, it is critical to ensure that acceptance testers have the underlying background and experience in these systems to be able to adjust to the complexities and permutations that a tester will encounter out in the field.

The certifications should, at a minimum, require completion of the following components:

- Post-secondary training in a state-approved or nationally accredited educational program (including the state-certified apprenticeship system; nationally accredited colleges and universities), with the training institutions or types of training institutions identified by the CEC.
- A minimum number of hours of work experience equal to or exceeding the number of hours to meet any contractor licensure, trade journey card, or any other licenses or regulations affecting contractors or workers working in the field.
- Training and competency testing that includes hands on training and testing.

The regulations should clearly require that training and competency testing include hands on training and testing. The certification should also be tied to a trade or professional organization with continuing education requirements for maintenance of good standing.

Sincerely,

Nicholas Zef